

New Street Roadway Construction & Petronelli Way Improvements

(Project # DPW-20STREET)

Brockton,
Massachusetts

Prepared for **City of Brockton
Office of Planning and Economic Development
Brockton, Massachusetts**

Prepared by **Vanasse Hangen Brustlin, Inc.
Watertown, Massachusetts**

June 23, 2021

**CITY OF BROCKTON, MASSACHUSETTS
NEW STREET ROADWAY CONSTRUCTION
& PETRONELLI WAY IMPROVEMENTS**

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Advertisement for Bids

ADVERTISEMENT FOR BIDS

NEW STREET ROADWAY CONSTRUCTION & PETRONELLI WAY IMPROVEMENTS

Sealed bids for construction of the New Street Roadway Construction & Petronelli Way Improvements will be received by the **Chief Procurement Officer at the Procurement Department, Basement Level, Room B5, City Hall, 45 School Street, Brockton, Massachusetts, 02301 until 11:00 AM on Wednesday July 28, 2021.** Any bids received after 11:00 AM will be rejected. Bids will be opened virtually via Zoom and read aloud at 11:15 AM on Wednesday July 28, 2021 at the following link:

<https://zoom.us/j/94684654275?pwd=NzRJY0EwS2lrWURPRGVaQXREaGlWQT09>

Meeting ID: 946 8465 4275

Passcode: YA6xXv

A bid summary will be available within seventy-two (72) hours of the bid opening. All bidding procedures will be in accordance with the Massachusetts General Laws Chapter 30, Section 39M inclusive as amended.

There will be a **pre-bid meeting** held virtually via Zoom on **Wednesday July 14, 2021 at 11:00 AM** at the following link:

<https://vhb.zoom.us/j/97307315027?pwd=bFRoZllybHE5Z1p6bERBLzErS0d0QT09>

The work under the base Contract consists of furnishing all labor, materials, and equipment required for roadway construction of New Street from Petronelli Way to Franklin Street in addition to pavement milling and overlay and sidewalk reconstruction on Petronelli Way from Main Street to Montello Street in the City of Brockton, Massachusetts. Add alternate #1 for this Contract consists of the project-wide installation of new decorative streetlights. Add alternate #2 for this Contract consists of the project-wide planting of street trees.

The work under the base Contract includes full depth roadway construction, installation of new granite curb, removing and resetting existing granite curb, installation of new cement concrete sidewalks and wheelchair ramps, reconstruction of existing cement concrete sidewalks, minor drainage and water service improvements, removal of existing lighting foundations, bases, poles, and fixtures, installation of new light pole foundations, installation of electrical conduit, new pavement markings, installation of roadway signs, and other miscellaneous items of work.

The work under add alternate #1 consists of the project-wide purchase, installation, electrical connection, and activation of new decorative lighting bases (not foundations), poles, and fixtures. The work under add alternate #2 consists of the project-wide purchase and installation of street trees.

The Contractor must substantially complete all work by **December 15, 2021**. In coordination with on-going building construction on Petronelli Way, the Contractor may be asked to delay top course paving but said paving shall not be delayed beyond November 15, 2021.

The Project value is estimated to be \$800,000. Prevailing Wages, as determined under M.G.L. c. 149, § 26-27H shall apply on this project. Materials, equipment, and supplies used on this project are exempt from sales tax to the extent provided by M.G.L. c. 64H, § 6(f). The Project is expected to commence on or about **August 23, 2021** and be completed no later than **December 15, 2021**.

To obtain copies of the Bid Documents, Plans, and Specifications go to www.accentblueprints.com and create an account. The project will be listed as City of Brockton New Street Roadway Construction & Petronelli Way Improvements. Downloading plans and specifications is free. You will be charged if you require prints.

Bidders shall be pre-qualified by the Massachusetts Department of Transportation in Highway Construction up to the estimated Contract value of \$800,000. Information on MassDOT Prequalification can be found at: <https://www.mass.gov/prequalification-of-horizontal-construction-firms>

Bid Deposits shall be submitted in the amount of 5% of the bid price including any alternates. The Bid Deposit shall be made payable to the City of Brockton in the form of a bid bond issued by a surety licensed to do business in the Commonwealth of Massachusetts and shall be conditioned upon the faithful performance by the principal of the agreement contained in the bid. The City of Brockton reserves the right to reject or approve a surety. The Bid Deposits of the three (3) lowest responsible and eligible bidders shall be retained until the execution and delivery of the Contract.

The Contract will be awarded to the bidder deemed by the City of Brockton to be the lowest responsible and eligible bidder. Selection of the successful bidder will be based upon bidder qualifications, including evidence of past performance on similar projects and bid price. The Contract award is be subject to the availability of funding.

The successful general bidder will be required to furnish a Performance Bond and a Labor and Materials Bond, each of which shall be in the amount equal to one hundred percent (100%) of the Contract price.

The City of Brockton reserves the right to reject any bid which, in its judgment, fails to meet the requirements of this Advertisement for Bids or which is incomplete, conditional, or obscure, or which contains additions or irregularities, or in which errors occur in addition to the foregoing. The City of Brockton also reserves the right to reject any and all proposals if it deems such rejection(s) to be in the best interest of the City. The City of Brockton further reserves the right to waive any minor discrepancies or informalities, to permit a bidder to clarify discrepancies or to conduct discussions with all qualified bidders in any manner necessary to serve the best interests of the City. Any fees or other expenses of the bidders associated with this Advertisement for Bid process are solely the responsibility of the bidders.

Any bid submitted will be binding for sixty (60) days after the time of bid opening.

All questions and correspondence in connection with this Project should be made via email only to both the City Engineer, Chike Odunukwe, at codunukwe@cobma.us and Wayne Amico at wamico@vhb.com.

The City of Brockton is an affirmative action/equal opportunity employer and encourages participation from certified minority and women-owned businesses in this Advertisement for Bids. The successful bidder must ensure that employees and applicants for employment are not discriminated against because of their race, color, religion, sex, national origin, or any other basis prohibited by law.

Each bidder shall visit the site of the proposed work and shall fully acquaint himself with the conditions as they exist and shall also thoroughly examine the contract documents. Failure of bidder to visit the site and acquaint himself with the contract documents shall in no way relieve the bidder from any obligation with respect to his bid.

Each bidder shall submit the Site Visit Certification form enclosed in the Bid Documents as part of the bid.

Instructions to Bidders

INSTRUCTIONS TO BIDDERS

PROJECT DESCRIPTION

The work under the base Contract consists of furnishing all labor, materials, and equipment required for roadway construction of New Street from Petronelli Way to Court Street and sidewalk reconstruction on Petronelli Way from Main Street to Montello Street in the City of Brockton, Massachusetts. Add alternate #1 for this Contract consists of the project-wide installation of new decorative streetlights. Add alternate #2 for this Contract consists of the project-wide planting of street trees.

The work under the base Contract includes full depth roadway construction, installation of new granite curb, removing and resetting existing granite curb, installation of new cement concrete sidewalks and wheelchair ramps, reconstruction of existing cement concrete sidewalks, minor drainage and water service improvements, removal of existing lighting bases (not foundations), poles, and fixtures, installation of new light pole foundations, installation of electrical conduit, new pavement markings, installation of roadway signs, and other miscellaneous items of work.

The work under add alternate #1 consists of the project-wide purchase, installation, electrical connection, and activation of new decorative lighting bases (not foundations), poles, and fixtures. The work under add alternate #2 consists of the project-wide purchase and installation of street trees.

The Contractor must substantially complete all work by **December 15, 2021**. In coordination with on-going building construction on Petronelli Way, the Contractor may be asked to delay top course paving but said paving shall not be delayed beyond November 15, 2021.

All work shall conform to the design plans, specifications, and all current MassDOT standards.

1. GENERAL; DEFINITIONS

- a. In accordance with the Advertisement for Bids, a copy of which is bound herewith, the City of Brockton (the “Owner”), invites sealed bids on the separate copies of Bid Forms furnished for that purpose, for construction of the New Street Roadway Construction & Petronelli Way Improvements (“Project”). The “Work” consists of the Project as more specifically described in the contract drawings and specifications and shall include all incidental work necessary or customarily done for the completion of the Project.
- b. The Bound-in Bid Forms in the Contract Documents are for continuity and the convenience of bidders and are not to be detached from the Contract Documents, filled out or executed.
- c. The following definitions shall apply in these Instructions and in the other Contract Documents, unless otherwise specified.
 - I. The term “bidding documents” shall include the Advertisement for Bids, these Instructions, the bid forms, bond forms, contract forms and other

Contract Documents bound herewith, and shall include the Drawings, the Specifications, and all Addenda issued prior to receipt of bids.

- II. The term “Contract Documents” shall mean the Contract entered into between the Owner and the successful bidder, including all documents enumerated as Contract Documents in the Agreement between Owner and Contractor, and all Modifications (as defined in the Contract) issued after execution of the Contract.
- III. The terms “Addenda” and “Addendum” shall mean written documents and/or drawings issued by the Owner prior to execution of the Contract which supplement, modify, correct, explain or interpret the bidding documents.

2. RECEIPT, OPENING AND REJECTION OF BIDS

- a. Bids will be received by the Chief Procurement Officer at the Procurement Department, Basement Level, Room B5, City Hall, 45 School Street, Brockton, Massachusetts, 02301 until **Wednesday July 28, 2021 at 11:00 AM** and then opened virtually via Zoom at the following link:

<https://zoom.us/j/94684654275?pwd=NzRJY0EwS2lrWURPRGVaQXREaGlWQT09>

Meeting ID: 946 8465 4275

Passcode: YA6xXv

A bid summary will be available within seventy-two (72) hours of the bid opening.

There will be a pre-bid meeting held virtually via Zoom on Wednesday July 14, 2021 at 11:00AM at the following link:

<https://vhb.zoom.us/j/97307315027?pwd=bFRoZllybHE5Z1p6bERBLzErS0d0QT09>

- b. The Owner reserves the right to:
 - I. reject any proposal which is not accompanied by the required bid deposit or which, in the Owner’s judgment, fails to meet the requirements of the Advertisement for Bids, the Instructions or statutory requirements, or which is incomplete, conditional, or obscure, or which contains additions or irregularities, or in which errors occur in addition to the foregoing;
 - II. reject any and all proposals if it deems such rejection(s) to be in the best interest of the Owner;
 - III. consider informal and reject any bid which contains erasures, alterations, additions, errors or irregularities of any kind, or which contains proposed

prices for any class or item of work which are, in the judgment of the Town, substantially less or more than the actual cost to complete the Work as that term is defined in the Contract Document; or

- IV. notwithstanding its rights under items 2b(i)-(iii) above, waive any minor discrepancies or informalities, to permit a bidder to clarify discrepancies or to conduct discussions with all qualified bidders in any manner necessary to serve the best interests of the Owner.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered.

3. CONTRACT AWARD

The Owner will award the contract to the lowest eligible and responsible bidder within thirty (30) business days, after (i) the opening of bids or (ii) the receipt by the Owner of any approvals necessary from Federal or State agencies in connection with the project, whichever is later. As used herein, the term “lowest responsible and eligible bidder” shall mean the bidder (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work as further described in the Contract Document; (2) who shall certify that he is able to furnish labor that can work in harmony with all elements of labor employed or to be employed in the Work; and (3) who obtains within ten (10) days of the notification of contract award the security required under Section 7 below.

The successful bidder will be notified in writing, by mail or otherwise, that its bid has been accepted and that it has been awarded the Contract. The successful bidder shall execute the Contract and furnish the required bonds, at the offices of the City if requested, within ten (10) days after presentation of the contract to the bidder or notice to the bidder that the Contract is ready for execution.

The Owner shall not enter into a contract with, and shall not approve as a subcontractor furnishing labor and materials for a part of any work of this contract, a foreign corporation which has not filed with the Owner a certificate of the Secretary of State of the Commonwealth of Massachusetts stating that such corporation has complied with M.G.L. c. 156D and the date of such compliance. The Owner shall report to said Secretary of State and to the Department of Corporations and Taxation of the Commonwealth of Massachusetts any foreign corporation performing any work under this contract or any such subcontract, and any person, other than a corporation, performing work under this contract or any such subcontract, and residing or having a principal place of business outside the Commonwealth of Massachusetts.

4. PREPARATION OF BIDS

Each bid must be submitted on the prescribed bid forms, must be signed and accompanied by the Non-Collusion Affidavit form, and all Additional Bid Requirements that are supplied to you in the Proposal Package. The bid shall state the legal name of the bidder and shall be signed in ink by a person or persons legally authorized to bind the bidder to a contract. The name and title of the person or persons signing the bid shall be typed or printed below the signature(s).

All blank spaces for bid prices must be filled in, with ink or typewriter in both words and figures, and all of the foregoing Certifications must be fully completed and executed when submitted. Where required, bid prices for each item on the bid form shall be stated in both words and figures. Where itemized lump sum or unit prices are called for, all such prices shall be provided by the bidder. In the event of a discrepancy between prices written in words and prices written in figures, the written words shall govern.

Each bid must be submitted in a sealed envelope bearing on the outside the name of bidder, his address and the name and contract number of the project for which the bid is submitted. If the bid is mailed, the bidder shall enclose its sealed bid and bid deposit in an outer envelope addressed as follows:

FROM: [Bidder's name and business address]
RE: **New Street Roadway Construction & Petronelli Way Improvements**
TO: **City of Brockton, Procurement Department**

All bidders are cautioned to allow ample time for transmittal of bids. Bidders are solely responsible for delivery to and receipt by the Owner of bids by the bid deadline. Bids received after the specified time will not be accepted or recognized. The time of receipt will determine the acceptability of mailed bids, regardless of postmark.

5. EMAIL MODIFICATION

Any bidder may modify his bid by email communication at any time prior to the scheduled closing time for receipt of bids provided such email communication is received by the Owner prior to the closing time and, provided further, the Owner is satisfied that a written confirmation of the email modification over the signature of the bidder was mailed prior to the closing time. The email communication should not reveal the bid price but should provide the addition or subtraction or other modifications so that the final prices of terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two (2) business days after the closing time, no consideration will be given to the email modification.

6. QUALIFICATIONS OF BIDDER

All bidders must be prequalified for horizontal construction through MassDOT up to the estimated contract value of \$800,000 in the Highway Construction class of work. Instructions on the prequalification process can be found here: <https://www.mass.gov/prequalification-of-horizontal-construction-firms>.

Contractors who are not prequalified in Highway Construction to provide the services listed for the total prequal contract value of \$800,000, *without documented poor performance issues*, and want to bid, should submit a waiver request at least two (2) weeks prior to the bid opening to allow for time to appeal in the event that a waiver is not granted. Contractors are expected to be able to provide their services for the total contract value including add alternates.

The Contract will be awarded to the lowest bid submitted by a responsible and eligible bidder. As used herein, the term "lowest responsible and eligible bidder" shall mean the following: To

be considered “responsible” the bidder shall possess the skill, ability and integrity necessary to faithfully perform the work called for by the Contract, based upon a determination of competent workmanship and financial soundness in accordance with the provisions of M.G.L. Ch. 30 Section 39M. To be considered “eligible” the bidder shall be able to meet all requirements for bidders set forth in M.G.L. Ch. 30, Section 39M and not be debarred from bidding, and shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the Work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. Without limitation, the investigation of a bidder may seek to determine whether the bidder is authorized to do business in the Commonwealth of Massachusetts, has had relevant previous experience, and has available equipment, forces and financial resources adequate to assure the Owner that the Work will be completed in accordance with the Contract Documents. The Owner may contact references, and may consider evidence of problems with past performance, such as defaults, contract terminations, imposition of damages or other failures to perform. The amount of other Work to which the bidder is committed may also be considered. The scope of the Owner’s investigation of any particular bidder shall remain within the Owner’s discretion.

To assist the Owner in its investigation of bidder qualifications, each bid **must include** the name of the Superintendent who is to be used on this project, and his/her experience. Each bid **must also include** a comprehensive list of:

1. Any and all citations and/or violations issued by regulatory agencies and/or judgments against bidder from a court of law.
2. All assessed penalties or liquidated damages, and the project in which they occurred.
3. Any and all contract terminations.
4. A list of all projects worked on over the past three years.
5. A list of the total number of supervisors and workers intended to be assigned to this Project.

The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. The Owner’s decision or judgment on these matters will be final, conclusive, and binding. Conditional bids will not be accepted.

7. BID SECURITY

Bid Deposits shall be submitted in the amount of 5% of the bid price including any potential alternates. The Bid Deposit shall be made payable to the City of Brockton in the form of a bid bond issued by a surety licensed to do business in the Commonwealth of Massachusetts and shall

be conditioned upon the faithful performance by the principal of the agreement contained in the bid.

All bid deposits, except those of the three lowest responsible and eligible bidders, will be returned within ten (10) business days, after the opening of the general bids. The bid deposits of the three lowest responsible and eligible bidders will be returned upon the execution and delivery of the Contract, or if no award is made, upon the expiration of sixty (60) business days, except that, if any bidder fails to perform his agreement to execute a Contract and furnish a Performance Bond and a Labor and Materials Payment Bond as stated in his bid, his bid deposit shall become the property of the City of Brockton as liquidated damages; provided that the amount of the bid deposit which becomes the property of the City of Brockton shall not, in any event, exceed the difference between his bid price and the bid price of the next lowest responsible and eligible bidder; and provided further that, in case of death, disability or other unforeseen circumstances affecting the bidder, his bid deposit may be returned.

8. TIME OF COMPLETION

Bidder must agree to commence work on a date to be specified in a written "Notice to Proceed" from the Owner and to substantially complete all work by **December 15, 2021**. In coordination with on-going building construction on Petronelli Way, the Contractor may be asked to delay top course paving but said paving shall not be delayed beyond November 15, 2021.

9. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- a. It is the responsibility of each bidder before submitting a bid to (1) examine the Bidding and Contract Documents thoroughly; (2) examine the location of the Project to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work; (3) Consider Federal, State, and local laws, regulations, and ordinance that may affect cost, progress and performance of the Work; 4) Notify the Owner of all apparent conflicts, errors, or discrepancies in the Contract Documents.
- b. Before submitting a bid, each bidder will be responsible to make or obtain such explorations, tests, and data concerning physical conditions which may affect cost, progress, performance or furnishing of the Work and which the bidder deems necessary to determine its bid for performing the Work in accordance with the time, price, and the terms and conditions of the Contract Documents. Failure of a bidder to visit the site and acquaint itself with the bidding documents or to attend the pre bid conference, if any, shall in no way relieve the bidder from any obligation with respect to its bid or under the Contract if awarded the bid.
- c. Owner may, at a bidder's request, provide each bidder access to the site to conduct such explorations and tests as such bidder deems necessary for submission of a bid.
- d. The submission of a bid will constitute a representation by the bidder that the bidder has complied with every requirement of the Specification, that without exception the bid is premised upon performing and furnishing the work required.

- e. No claim for any extra monies will be allowed because of unintentional error or conflicts in the Contract Documents.
- f. The failure or omission of any bidder to examine any form, instrument, or document and to fail to be familiar and visit the site will not relieve a successful bidder of the obligation to furnish all material, labor and equipment necessary to carry out the provisions of the Contract.
- g. All bidders must include the Site Visit Certification form with their bid.

10. ADDENDA AND INTERPRETATIONS

No oral interpretation of the meaning of the plans, specification or other bidding documents will be made to any bidder. Every request for such interpretation shall be made via email only to both the City Engineer, Chike Odunukwe, at codunukwe@cobma.us and Wayne Amico at wamico@vhb.com and, to be given consideration, must be received at least five (5) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications issued not later than two (2) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addenda or interpretation shall not relieve such bidder from any obligations under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

11. SECURITY FOR FAITHFUL PERFORMANCE

Simultaneously with his delivery of the executed contract, the Contractor shall furnish a surety bond as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be provided by a duly authorized surety company satisfactory to the Owner. The successful general bidder will be required to furnish a Performance Bond and a Labor and Materials Bond, each of which shall be in the amount equal to one hundred percent (100%) of the contract price.

12. POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their powers of attorney.

13. NOTICE OF SPECIAL CONDITIONS

Attention is particularly called to those parts of the Contract Documents and specifications, which deal with the following:

- a. Inspection and testing of materials
- b. Insurance requirements
- c. Wage rates

- d. Non-discrimination in employment
- e. OSHA 10 Certification

14. LAWS AND REGULATIONS

The bidder's attention is directed to the fact that all applicable Federal and State laws, municipal bylaws and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract and the Work throughout, and will be deemed to be included in the Contract the same as though herein written out in full.

The award of the Contract is governed by M.G.L. c. 30, § 39M. Certain provisions of this and other applicable statutes are summarized or referred to in the Instructions to Bidders and other Contract Documents. Whenever any of the Contract Documents set forth or summarize applicable statutory provisions, whether or not the statutes have been specifically referred to, such summaries are for convenience only, do not purport to be complete or correct as summaries in any material particular, and shall in no respect supersede, expand or limit rights or duties of the Town or bidders in matters governed by statute.

Minimum rates of wages for work performed under this contract will be as determined by the Division of Occupational Safety of the Massachusetts Department of Labor and Work Force Development in accordance with the provisions of M.G.L. c. 149, §§ 26-27H. Attention is called to serious penalties established under law for violation of these provisions. The schedule of wage rate determinations applicable to this contract is included in the bidding documents.

15. PROTECTION AND RESTORATION OF PROPERTY

The Contractor, in constructing or installing facilities alongside or near sewers, drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls or other structures shall, at his expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them so that the services of these structures shall be maintained. He shall also be responsible for the repair or replacement, at his own expense, of any damage to such structures caused by his acts or neglect and shall leave them in the same condition as they existed prior to the commencement of work.

In case of damage to utilities, the Contractor shall promptly notify the Owner and shall furnish laborers to work temporarily under the Owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the City of Brockton or by the utility company, which suffers the loss. The cost of such repairs shall be borne by the Contractor without compensation therefore.

It shall be the responsibility of the Contractor to determine location, size, type, etc., of all underground utilities from the City of Brockton, and utility company concerned and to maintain all utilities in place during construction.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in protecting or repairing property as specified in this section shall

be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed thereafter.

16. PUBLIC SAFETY AND CONVENIENCE

Attention is directed to the fact that the work on this project is to be performed on properties which are utilized by pedestrians. Contractor shall furnish, install, maintain, and move all warning devices, barricades, signs, flares, bridging materials, special apparel, and other safety measures and controls necessary for the protection of motorists, of pedestrians, and of his own personnel. When, in the judgment of the Owner, construction operations constitute a hazard to traffic in the area, the Contractor may be required to suspend operations during certain hours.

17. SALES TAX

M.G.L. c. 64H, § 6(f) exempts from Massachusetts sales tax building materials and supplies to be used in the Project, and bidders shall not include in their bids any amount therefor. The words "building materials and supplies" shall include all materials and supplies consumed, employed or expended in the construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge, or other such public work, as well as such materials and supplies physically incorporated therein. Said words shall also include rental charges for construction vehicles, equipment and machinery rented specifically for use on the site of the Project or while being used exclusively for the transportation of materials for the Project. The number of the certificate granted by the Commissioner of Revenue for use in obtaining the exemption will be given to the successful general bidder. Each bidder shall take this exemption into account in calculating its bid and shall not include any sales tax on its bid.

**18. INTEREST OF MEMBERS, OFFICERS, OR EMPLOYEES OF THE OWNER;
MEMBERS OF LOCAL GOVERNING BODY, OR OTHER PUBLIC OFFICIALS**

No member, officer or employee of Owner, or its designees or agents, no member of the governing body of the locality in which the project is situated, and no other public officials, member, officer or employee of the Owner, or its designees or agents, no members of the governing body of such locality or localities who exercises any functions or responsibilities with respect to the Project during his tenure or for one year thereafter, shall have any interest, direct or indirect, in any agreement, contract or subcontract, or the proceeds thereof, for Work to be performed in connection with the Project. The Contractor shall incorporate or cause to be incorporated, in all of its agreements, contracts or subcontracts a provision prohibiting such interest pursuant to the purposes of this section.

19. NON-DISCRIMINATION IN EMPLOYMENT

Contract for Work under this proposal will obligate the contractors and subcontractors not to discriminate in employment practices.

Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the Contract.

The successful bidder must be prepared to comply in all respects with the Contract provisions regarding Equal Employment Opportunity.

20. SEPARATE CONTRACTS

- a. The Owner reserves the right to perform construction or operations related to the Project under separate contracts, and/or with the Owners' own forces in connection with other portions of the Project or other construction or operations on the site under separate Contract.
- b. The Contractor shall cooperate fully with separate contractors with regard to storage of materials and execution of separate contract work and shall connect and coordinate the separate contractors' construction and operations with the Contractor's as required by the Contract Documents.
- c. It shall be the Contractor's responsibility to inspect all separate contractor work affecting the Work and to report to the Owner any irregularities or defects that will not permit completion of the Work in a satisfactory manner.
- d. When results of separate contractors' work depend on proper results for the Contractor's Work, the Contractor shall immediately report to the Owner or Engineer any discrepancies or defects that would be unsuitable for proper execution of the Work.
- e. It shall be the responsibility of the Contractor to measure the completed work in place and report to the Owner immediately any difference between completed work by others and the Drawings.
- f. The Contractor's failure to notify the Owner of such irregularities shall indicate the separate contractors' work has been satisfactorily completed to receive the Work.
- g. The Contractor shall not be responsible for defects in the separate contractors' work of which could not then have been reasonably discovered.

21. ADD ALTERNATES

Should the Owner determine that it would be in its best interest to modify the scope of proposed work, the following items may be added as alternatives to the Contract, increasing the Total Bid.

Each bidder shall acknowledge the three alternates by completing the sections entitled "Supplemental Form for General Bid – Add Alternate # 1," and "Supplemental Form for General Bid – Add Alternate # 2," entering the dollar amount of addition or subtraction corresponding to each item. Each Bidder shall enter the sum of the appropriate dollar amounts in the spaces provided.

In the event any items part of the Add Alternate do not involve a change in dollar value, the bidder shall so indicate by inserting “No Change,” “No Charge,” “N/C,” or “0” in the corresponding space provided for the dollar amount of the item.

The Add Alternates will be chosen at the discretion of the City, with Add Alternate #1 being the most important and Add Alternate #2 being the least important.

The low bidder will be determined on the basis of the sum of the Base Bid and the accepted Add Alternates.

Add Alternate #1

The work under add alternate #1 consists of the project-wide purchase, installation, electrical connection, and activation of new decorative lighting bases (not foundations), poles, and fixtures.

Add Alternate #2

The work under add alternate #2 consists of the project-wide purchase and installation of street trees.

22. AFFIRMATIVE ACTION PLAN

The Bidder's attention is drawn to the following procedures and goals to be achieved on Contracts with the City of Brockton:

- a. It is the intent of the City of Brockton to target five (5%) percent of all contract work to Minority Business Enterprises (MBE) and five (5%) percent to Woman Business Enterprises (WBE). To achieve these goals, emphasis will be made to attract General Contracting firms, in these categories to bid City projects. Whenever possible, every effort will be made to award Contracts to Minority and Women Business Enterprises.
- b. General Contractors may request from the Supplier Diversity Office (SDO), **the McCormack Building, One Ashburton Place, Room 1313, Boston, MA 02108,** (617) 502-8831, their list of Certified firms when soliciting sub-contractors.
- c. General Contractors shall request from the State Diversity Office (SDO) a list of Certified firms supplying material, equipment, and other non-professional services. The target goals of five percent (5%) for MBE and five percent (5%) for WBE are to be attained, where possible, by the General Contractor when purchasing materials or hiring equipment.
- d. The Successful Bidder is responsible for the submission of all forms and back up reports from all of his/her sub-contractors.
- e. Appendix J, Letter of Intent for Construction Services, shall be completed and submitted as part of the bid for each MBE and WBE the Contractor intends to use on this Project.

23. ADDITIONAL PROJECT INFORMATION REQUIRED TO SUBMIT A BID

Drainage Pipes: Schedule 35 PVC pipe may be substituted for reinforced concrete pipe (RCP) shown on the plans and bidding documents upon approval by the City of Brockton DPW. Prior to the start of construction, the City of Brockton will provide any material specifications required for this item.

Soil Testing: A report prepared by Ransom Consulting, LLC with the results of soil testing in the project area has been included in the bidding documents. Items related to the disposal of contaminated soil have been included in the Supplemental Forms for General Bid.

Light Pole Foundations: Please note, some of the proposed light poles are called out to be mounted on existing foundations. Please see Special Provision for Item 823.101 on sheets 185 to 190 that discusses an adapter for this installation. If an existing foundation is deemed unusable, the foundation shall be replaced with a new foundation.

Compaction and Material Testing: If required by the Engineer or the City, the Contractor shall engage a certified independent testing company to provide compaction and/or material testing as required. Such materials may include, but are not limited to, gravel, dense graded crushed stone, asphalt courses, and concrete. The Contractor shall engage a certified independent testing company at their own cost and no additional compensation outside the contract items will be considered for payment for these services.

Site Visit: Due to COVID-19 gathering restrictions, a group site visit will not be conducted. Contractors shall visit the project location individually and submit the enclosed Site Visit Certification form with their bid to document the visit.

Bid Forms

FORM OF BID

From: _____
(Name of Bidder)

To: City of Brockton (the "Awarding Authority")

A. The Undersigned proposes to furnish all labor, equipment, tools and materials required for the construction of the New Street Roadway Construction & Petronelli Way Improvements (the "Project"), in accordance with the accompanying Contract Documents and plans and specifications prepared by Vanasse Hangen Brustlin, Inc. for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. The bid includes addenda numbered _____.

C. The proposed maximum contract price (including all add alternates) is _____ dollars

(\$ _____). Bidder hereby confirms that it has included bid security in the amount of 5% of the proposed contract price made payable to the City of Brockton.

D. Bidder accepts all of the terms and conditions of the Advertisement for Bids and Instructions to Bidders.

E. Bidder promises and agrees that this Bid will remain subject to acceptance for sixty (60) business days after the day of Bid Opening.

F. The undersigned agrees that, if selected as contractor, he or she will within ten (10) business days, after presentation thereof by the Awarding Authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and a labor and materials or payment bond, each in the form contained in the bidding documents and of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the amount of the contract price, the premiums for which are to be paid by the contractor and are included in the contract price. The undersigned understands and agrees that the bid deposit accompanying this bid shall become the property of the Awarding Authority if the bidder fails to execute such contract or otherwise fails to comply with the terms of this bid.

G. The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work, and in the specified time described in the bid and contract documents, and that he will comply fully with all laws and regulations applicable to awards made subject to M.G.L. c. 30, § 39M.

H. The undersigned further certifies under the penalties of perjury that:

1. This bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.
 2. The said undersigned is not presently debarred from doing public construction work in the commonwealth under the provisions of M.G.L. c. 29, § 29F, or any other applicable debarment provision or any rule or regulation.
 3. Bidder has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.
 4. The foregoing bid is based upon the payment to laborers to be employed on the Project of wages in an amount no less than the applicable prevailing wage rates established for the Project by the Massachusetts Department of Labor Standards.
 5. The bidder has complied with the Immigration Reform and Control Act of 1986, as amended, and with all regulations adopted thereunder, with respect to all of its employees who will be performing work under this contract and further certifies that said contractor does not knowingly employ any person in violation of United State immigration laws. Bidder further certifies that it will require a similar certification to be executed by any subcontractor who will perform work under this contract and will maintain such certifications for inspection by the Awarding Authority upon its request.
- I. By signing and submitting this Form for General Bid, the bidder represents that:
1. Bidder has examined copies of all bidding documents.
 2. Bidder has familiarized itself with the nature and extent of the Contract Documents, Work site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the work.
 3. Bidder has studied carefully all reports and drawings of physical conditions included with these specifications, and accepts that all measurements and technical data included herein is the engineer's estimates and the bidder has made such investigations of his own as necessary and has based his bid on those investigations.
 4. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, and studies (in addition to or which pertain to the physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work) as bidder considers necessary for the performance or furnishing of the Work at the Contract Price, with in the Contract Time and in accordance with the other terms and conditions of the Contract Documents, and no additional examination,

investigations, explorations, tests, reports, or similar information of data are or will be required by bidder for such purposes.

5. Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
 6. Bidder has given the Awarding Authority written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof is acceptable to bidder.
 7. Bidder acknowledges that the Awarding Authority has the right to reject any or all bids and to waive informalities in the bidding, if it deems such rejection(s) to be in its best interest.
 8. Bidder represents that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.
- J. The following attached standard City of Brockton forms and additional information as noted must be completed and submitted as part of the bid proposal:
1. Appendix "A" – Vendor Tax Certificate
 2. Appendix "B" – Affidavit of Clerk of Corporation Vendor
 3. Appendix "C" – Vendor Registration Form
 4. Appendix "D" – Attestation Clause
 5. Appendix "E" – Certificate of Insurance
 6. Appendix "F" – Deviation Sheet
 7. Appendix "G" – Vendor Work History
 8. Appendix "H" – OSHA Certification
 9. Appendix "I" – Debarment Form
 10. Appendix "J" – Letter of Intent for Construction Services (if applicable)
- K. Post-Bid Submittals: If awarded the Contract, the undersigned agrees to furnish, without limitation, the following information prior to the time established for execution of the Contract:

1. Massachusetts Foreign Corporation Certificate, if applicable.
 2. OSHA training records for each employee assigned to this project.
- L. References: List of all projects of a similar size and scope completed within the last five (5) years, including at least two municipalities for which such work has been performed. Attach additional pages if necessary.

Name of Project	Location	Contact Person	Phone/Email
1.			
2.			
3.			
4.			

Date of Bid: _____

(Print Name of Bidder)

By: _____
(Signature)

(Print Name of Person Signing Bid and Title)

(Business Address)

(City, State and Zip Code)

Telephone: () _____

Social Security Number or Federal Identification Number: ¹ _____

NOTE: If the bidder is a corporation, indicate state of incorporation, give full names of officers; if a partnership, give full names and addresses of all partners; and if an individual, give residential address if different from business address. Use the following spaces, and additional sheets if necessary:

If a Corporation:

Incorporated in what state: _____

President: _____

Treasurer: _____

Secretary: _____

If a foreign corporation (incorporated or organized under laws other than the laws of the Commonwealth of Massachusetts), is the corporation registered with the Secretary of State of Massachusetts?

Yes _____ No _____

¹ The bidder's Social Security Number and Federal Identification Number will be furnished to the Massachusetts Department of Revenue to determine whether the bidder has met tax filing or tax payment obligations. This request is made under the authority of M.G.L. c. 62C, § 49A.

If the bidder is selected for the work referred to above, it is required under M.G.L. c.30 § 39L to furnish to the Awarding Authority a certificate of the Secretary of State stating that the corporation has complied with M.G.L. c. 156D and the date of such compliance.

If a Partnership: (Name all Partners)

Name of Partner:_____

Residence:_____

Name of Partner:_____

Residence:_____

Name of Partner:_____

Residence:_____

If an Individual:

Name:_____

Residence:_____

If an Individual doing business under a firm name:

Name of Firm:_____

Name of Individual:_____

Business Address:_____

Residence:_____

If other form of business organization, please provide attachment describing the form of organization and the name of officers or partners therein.

Supplemental Form for General Bid - Base Bid



Supplemental Form for General Bid - Base Bid

Project: New Street / Petronelli Way

Location: Brockton, MA

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
100.001	60	ELECTRICIAN at _____ HR				
120.1	500	UNCLASSIFIED EXCAVATION at _____ CY				
141.1	50	TEST PIT FOR EXPLORATION at _____ CY				
151.	150	GRAVEL BORROW at _____ CY				
170.	1,700	FINE GRADING AND COMPACTING - SUBGRADE AREA at _____ SY				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM at _____ LS				
180.02	150	PERSONAL PROTECTION LEVEL C UPGRADE at _____ HR				
180.03	40	LICENSED SITE PROFESSIONAL SERVICES at _____ HR				
181.11	25	DISPOSAL OF UNREGULATED SOIL at _____ TON				
181.12	25	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY at _____ TON				
181.13	900	DISPOSAL OF REGULATED SOIL - OUT-STATE FACILITY at _____ TON				
181.14	25	DISPOSAL OF HAZARDOUS WASTE at _____ TON				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
182.1	1	INSPECTION AND TESTING FOR ASBESTOS at _____ LS				
182.21	1	ASBESTOS ABATEMENT at _____ FT				
201.	1	CATCH BASIN at _____ EA				
202.	1	MANHOLE at _____ EA				
220.	12	DRAINAGE STRUCTURE ADJUSTED at _____ EA				
222.3	2	FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD at _____ EA				
241.12	60	12 INCH REINFORCED CONCRETE PIPE at _____ FT (See bid documents page 15 for possible material substitution.)				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
303.06	10	6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT) at _____ FT				
309.	100	DUCTILE IRON FITTINGS FOR WATER PIPE at _____ LB				
358.	5	GATE BOX ADJUSTED at _____ EA				
370.1	1	8X6 INCH TAPPING SLEEVE, VALVE AND BOX at _____ EA				
376.	1	HYDRANT at _____ EA				
381.3	5	SERVICE BOX ADJUSTED at _____ EA				
402.	80	DENSE GRADED CRUSHED STONE FOR SUB-BASE at _____ CY				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
415.	2,000	PAVEMENT STANDARD MILLING at _____ SY				
440.	4,000	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL at _____ LB				
443.	3	WATER FOR ROADWAY DUST CONTROL at _____ MGL				
460.	410	HOT MIX ASPHALT at _____ TON				
472.	20	TEMPORARY ASPHALT PATCHING at _____ TON				
504.	110	GRANITE CURB TYPE VA4 - STRAIGHT at _____ FT				
509.	110	GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - STRAIGHT at _____ FT				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
509.1	35	GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS - CURVED at _____ FT				
580.	610	CURB REMOVED AND RESET at _____ FT				
590.	110	CURB REMOVED AND STACKED at _____ FT				
697.1	8	SILT SACK at _____ EA				
701.	580	CEMENT CONCRETE SIDEWALK at _____ SY				
701.2	140	CEMENT CONCRETE WHEELCHAIR RAMP at _____ SY				
748.	1	MOBILIZATION at _____ LS				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
804.3	950	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL) at _____ FT				
811.31	4	PULL BOX 12 X 12 INCHES - SD2.031 at _____ EA				
812.09	5	LIGHT STANDARD FOUNDATION PRECAST at _____ EA				
813.30	1,000	WIRE TYPE 7 NO. 10 GENERAL PURPOSE at _____ FT				
813.32	3,500	WIRE TYPE 7 NO. 6 GENERAL PURPOSE at _____ FT				
813.52	2,000	WIRE TYPE 10 - #8 GROUNDING AND BONDING at _____ FT				
823.71	13	HIGHWAY LIGHTING POLE AND LUMINAIRE REMOVED & STACKED at _____ EA				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
832.	60	WARNING-REGULATORY AND ROUTE MARKER - ALUM. PANEL (TYPE A) at _____ SF				
847.1	20	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL at _____ EA				
851.1	1	SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS at _____ LS				
866.104	1,375	4 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) at _____ FT				
866.112	540	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) at _____ FT				
867.104	1,400	4 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) at _____ FT				
874.	6	STREET NAME SIGN at _____ EA				

Supplemental Form for General Bid - Base Bid

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
874.4	8	TRAFFIC SIGN REMOVED AND STACKED at _____ EA				
875.2	4	PARKING METER POLE REMOVED AND STACKED at _____ EA				
875.4	5	PARKING METER at _____ EA				
999.001	1	POLICE DETAIL at \$60,000 ALL	60,000	00	60,000	00

TOTAL BASE BID: _____

(Written in Words):

Supplemental Form for General Bid - Add Alternate 1



Supplemental Form for General Bid Add Alternate 1

Project: New Street / Petronelli Way

Location: Brockton, MA

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
823.101	15	TYPE A ORNAMENTAL STREET LIGHT BASE, POST & LUMINAIRE at EA				

TOTAL ADD ALTERNATE #1: _____

(Written in Words):

Supplemental Form for General Bid - Add Alternate 2



Supplemental Form for General Bid Add Alternate 2

Project: New Street / Petronelli Way

Location: Brockton, MA

Item Number	Quantity	Item with Unit Bid Price Written in Words	Unit Price		Amount	
			Dollars	Cents	Dollars	Cents
120.1	40	UNCLASSIFIED EXCAVATION at _____ CY				
152.02	40	STRUCTURAL SOIL at _____ CY				
706.7	50	POROUS PAVEMENT SURFACE at _____ SY				
783.650	12	ULMUS AMERICANA - 'PRINCETON' 2.5-3 INCH CALIPER at _____ EA				

TOTAL ADD ALTERNATE #2: _____

(Written in Words):

Supplemental Form for General Bid - Totals

TOTAL BASE BID:

TOTAL ADD ALTERNATE 1:

TOTAL ADD ALTERNATE 2:

**BASE BID +
ADD ALT. 1:**

**BASE BID +
ADD ALT. 1 +
ADD ALT. 2:**

CERTIFICATION

INTERNAL ACCOUNTING

The Contractor certifies that it has internal accounting controls as required by Chapter 30, Section 39R, and that the Contractor will:

1. Maintain accurate and detailed accounts for a six-year period after the final payment;
2. File regular statements of management concerning internal auditing controls;
3. File an annual audited financial statement; and
4. Submit a statement from an independent certified public accountant that such CPA has examined management's internal auditing controls and expresses an opinion as to their consistency with management's statements in (2) above and whether such statements are reasonable with respect to transactions and assets that are substantial in relation to designer's financial statements. G.L. Chapter 7, Section 301(e).

Signed under the pains and penalties of perjury:

Name of Company: _____

Authorized Signature: _____

NOTE: This form is to be completed only when the contract exceeds \$100,000 and is for the purchase of materials or for the construction, renovation, etc., of public works or public buildings.

TO: City of Brockton, Massachusetts

RE: New Street Roadway Construction & Petronelli Way Improvements

To whom it may concern:

Please be advised that I have reviewed the statement on internal accounting controls prepared by/for _____ (name of company), in connection with the above captioned project. This statement is required under Massachusetts General Laws, Chapter 30, Section 39R. In my opinion, representations of management are consistent with our evaluation of the system of internal accounting controls. In addition, I believe that they are reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the firm's financial statements.

Yours sincerely,

Certified Public Accountant

NOTE: This form is to be completed only when the contract exceeds \$100,000 and is for the purchase of materials or for the construction, renovation, etc., of public works or public buildings.

SITE VISIT CERTIFICATION
New Street Roadway Construction
& Petronelli Way Improvements
Brockton, Massachusetts

I hereby certify that my company has visited the project site at Petronelli Way and the future location of New Street in Brockton, MA to familiarize ourselves with the project area, site conditions, surroundings, traffic patterns, physical constraints, etc.

Date of Site Visit: _____

Company: _____

Company Representatives Present: _____

Signature: _____

Print Name: _____

Appendices

CITY OF BROCKTON – CONTRACT APPENDIX A (SUBMIT WITH BID)

VENDOR TAX CERTIFICATE

I certify, under the pains and penalties of perjury, that to the best of my knowledge and belief, I have filed all state tax returns and paid all state taxes required under the law.

For use by CORPORATIONS ONLY:

PROPER CORPORATE NAME

SIGNATURE OF AUTHORIZED CORPORATE OFFICER

FEDERAL IDENTIFICATION NUMBER (FEIN)

For use by INDIVIDUALS OR COMPANIES OTHER THAN CORPORATIONS ONLY:

SIGNATURE OF INDIVIDUAL *

SOCIAL SECURITY NUMBER OR
FEDERAL IDENTIFICATION NUMBER (FEIN) **

*Approval of contract or other agreement will not be granted unless this certification clause is signed by applicant.

**Your social security number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing/payment obligations.

CERTIFICATE OF CORPORATE VOTE

I, _____; clerk/officer of _____
hereby notify that at a meeting of the Board of Directors/Officials of said corporation/company,
held on _____ the following vote was passed:
Vote to authorizing _____ to sign in behalf of the
corporation/company with the City of Brockton for _____.

Signature of Clerk/Officer

*** PLEASE ATTACH COPY OF OFFICIAL CERTIFICATE OF CORPORATE VOTE.**

CITY OF BROCKTON – CONTRACT APPENDIX B (SUBMIT WITH BID)

AFFIDAVIT OF CLERK OF CORPORATION VENDOR
(To be signed and completed by Clerk)

I, _____, certify as follows:
(Print full name of Clerk)

1. I am the Clerk of _____ (print exact name of corporation) which is duly organized and incorporated under the laws of the Commonwealth of Massachusetts (or State of _____) and is/is not (circle one) duly registered to do business in the Commonwealth of Massachusetts with a principal place of business at _____.

2. That the names, residential addresses and title officers of the above named corporation are as follows:

_____ President	_____ Address
--------------------	------------------

_____ Vice President	_____ Address
-------------------------	------------------

_____ Treasurer	_____ Address
--------------------	------------------

_____ Resident/Registered Agent	_____ Address
------------------------------------	------------------

3. That the above named corporation was incorporated on _____.

4. The federal tax identification number of said corporation is _____.

5. That the above named corporation is in good standing with the Secretary of the Commonwealth of Massachusetts or the State of _____ (if incorporated under the laws of a foreign State) and has filed all federal and state tax returns and paid all federal, state and/or local taxes required under law.

6. _____ is authorized to sign contract/agreements on behalf of _____ pursuant to a vote of the Board of Directors/Officers on _____.

7. I, on behalf of the within corporation, do hereby acknowledge that by this contract, this corporation is transacting business within the Commonwealth of Massachusetts as defined by M.G.L. Chapter 223 A, Section 1, et seq. And is subject to the jurisdiction of its courts. (Pertaining to Non-Massachusetts Corporations Only.)

SIGNED under the pains and penalties of perjury this _____ day of _____, 20____.

Signature of Clerk of Corporation

CITY OF BROCKTON – CONTRACT APPENDIX C (SUBMIT WITH BID)

VENDOR REGISTRATION FORM

TO BE COMPLETED BY ALL VENDORS:

TYPED/PRINTED NAME AND TITLE: _____

SIGNATURE: _____ DATE: _____

PROPER LEGAL NAME OF BUSINESS ENTITY: _____

FEIN or SOCIAL SECURITY NUMBER if FEIN is N/A: _____

BUSINESS ADDRESS: _____

TELEPHONE NO: _____ FAX NO: _____

EMAIL ADDRESS: _____

IF CORPORATION:

1. GIVE YOUR CORRECT CORPORATE NAME:

2. STATE AND DATE OF INCORPORATION:

3. IF FOREIGN CORPORATION, GIVE MASSACHUSETTS REGISTRATION DATE:

**IF FOREIGN BUSINESS ENTITY TRANSACTING BUSINESS IN MA, GIVE NAME/ADDRESS OF
RESIDENT/REGISTERED AGENT IN MA (REQUIRED):**

IF COMPANY, GIVE the OWNER'S NAME AND TITLE:

IF PARTNERSHIP, GIVE NAMES AND ADDRESSES OF PARTNERS:

IF TRUST OR LEGAL ENTITY, GIVE NAMES AND ADDRESSES OF TRUST OR LEGAL ENTITY:

MINORITY/WOMEN BUSINESS CLASSIFICATION STATEMENT

1. Our firm is principally (more than 50%) minority owned.

YES_____ NO_____

2. Our firm is principally (more than 50%) woman owned.

YES_____ NO_____

3. Our firm is registered with S.O.M.B.A. (State Office of Minority & Business Assistance)

YES___NO___

SOMWBA CERTIFICATION CATEGORY:___ / MBE___ WBE___

CITY OF BROCKTON – CONTRACT APPENDIX D (SUBMIT WITH BID)

Attestation Clause

Under Chapter 233, Section 35 of the Acts of 1983, political subdivisions and agencies of the Commonwealth must annually furnish to the Commissioner of Revenue a list of all persons who have provided goods, services or real estate space in the aggregate of five thousand dollars (\$5,000.00) or more. Chapter 233 of the Acts of 1983, Sections 35 and 36 require that each provider or vendor of goods and services to any municipal agency must attest that it/he is in compliance of all laws relating to taxes. The Attestation must occur at the time of issuing, renewing, or extending a license, contract or agreement. Any person/company failing to execute this Attestation Clause shall not be allowed to obtain, renew or extend a license, contract or agreement. Each successful bidder shall certify that he is in compliance with Chapter 233 by providing a Social Security Number or Federal Identification Number when a contract is issued.

VENDOR/COMPANY: _____

AUTHORIZED SIGNATURE: _____

TYPED/PRINTED NAME AND TITLE: _____

Certificate of Non-Collusion and Certificate of Bona Fide Bid

As per Chapter 30B, Section 10, any person submitting a bid for the procurement or disposal of supplies or services to any governmental body shall certify in writing, on the bid, as follows:

The undersigned certifies under the penalty of perjury that this bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word “person” shall mean any natural person, business partnership, corporation, union, committee, club or other organization, entity, or group of individuals.

VENDOR/COMPANY: _____

AUTHORIZED SIGNATURE: _____

Assurance of Non-Discrimination Compliance

Vendor does not subject employees or applicants for employment by this firm to discrimination on the basis of race, color, national origin, handicap, age or sex, in any of the following areas:

1. Recruitment, hiring, upgrading, promotion, whether for full-time employment, consideration for demotion, transfer, layoff, or rehiring.
2. Rates of pay or any other form of compensation and changes in compensation.
3. Job assignments and seniority status.
4. Granting and returning from leaves of absence, leave for pregnancy, or any other leave.
5. Fringe benefits available by virtue of employment, whether or not administered by the recipient.
6. Selection and financial support for training, including apprenticeship, professional meetings, conferences and other related activities, selection for tuition assistance, and selection for sabbaticals and leaves of absence to pursue training.
7. Employer-sponsored activities, including social or recreational programs.
8. Any other term, condition, or privilege of employment.

VENDOR/COMPANY: _____

AUTHORIZED SIGNATURE/TITLE/DATE: _____

ADDRESS AND TELEPHONE: _____

CITY OF BROCKTON – CONTRACT APPENDIX E (SUBMIT WITH BID)

Certificate of Insurance
(Service Contracts Only*)

As successful bidder on this Contract, you must supply the City of Brockton with a properly endorsed CERTIFICATE OF INSURANCE. Both the City of Brockton and the Vendor shall be named as co-insured/additional insured and the City shall be named certificate holder, and certificates of insurance shall be furnished to both parties. Reporting of accidents and claims shall be done by the Vendor. This Certificate MUST accompany the Contract. Unless otherwise provided for by the Contract, Vendor shall meet the following insurance requirements:

WORKERS' COMPENSATION: The Vendor, before commencing performance of the work required to be done under the Contract, shall provide for the payment of compensation, provided by the General Laws (ter. Ed.) Chapter 152 as amended to all persons to be employed by him/her in connection with said performance and shall continue in full force throughout the period of this Contract.

PUBLIC LIABILITY: Within fifteen (15) days after the award of this Contract the Vendor shall, at his/her own expense, procure and maintain insurance for Public Liability in the minimum amount of \$500,000/\$1,000,000 and Property Damage Liability in the minimum amount of \$50,000/\$100,000.

The policies shall contain a provision worded as follows: "The Insurance Company waives any right to subrogation against the City of Brockton which may arise by reason on any payments under this policy."

The policy/policies must contain on the face a notation that it/they cannot be cancelled without at least thirty (30) days notice in writing to the City as owner.

Furthermore, the certificates of all policies shall provide for notice of cancellation of the Contracting officer and the certificates shall indicate that the above provisions have been included.

***DESIGN/CONSULTING SERVICES, PLEASE PROVIDE PROOF OF PROFESSIONAL LIABILITY INSURANCE.**

AUTHORIZED SIGNATURE: _____

Indemnification and Release

To the fullest extent permitted by law, the VENDOR shall indemnify, defend, and hold harmless the CITY and their respective officers, directors, employees and agents ("Indemnified Parties") from and against all claims, damages, demands, losses, expenses, fines, causes of action, suits or other liabilities, (including costs, reasonable attorneys' fees, consequential damages and punitive damages), arising out of or resulting from, or alleged to arise out of or arise from, the performance of VENDOR'S work under this Contract whether such claim, damage, demand, loss or expense is attributable to bodily injury, personal injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting there from; but only to the extent attributable to the negligence of the VENDOR or any entity or individual for which it is legally responsible or vicariously liable and; regardless whether the claim is presented by an employee of VENDOR. Such indemnity obligation shall not be in derogation or limitation of any other obligation or liability of the VENDOR contained in this Contract or otherwise. This indemnification shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the VENDOR under any workers' compensation acts, disability benefits acts or other employee benefits acts. This indemnification shall be in addition to any indemnity liability imposed by the Contract and shall survive the completion of the work performed under or the termination of the Contract.

The VENDOR'S assumption of liability is independent from, and not limited in any manner by the VENDOR'S insurance coverage obtained pursuant to the terms of this Contract.

AUTHORIZED SIGNATURE: _____

CITY OF BROCKTON –CONTRACT APPENDIX F (SUBMIT WITH BID)

DEVIATION SHEET

All deviations and/or substitutions from the original specified items (or equal) must be noted in writing on the Deviation Sheet (Appendix “F”). Additional pages may be used if necessary. These items shall be approved by the lead department for compatibility, workmanship, and functionality before award of contract.

PLEASE LIST BELOW:

COMPANY: _____

TYPED NAME: _____

SIGNATURE: _____

TITLE: _____

CITY OF BROCKTON – CONTRACT APPENDIX G (SUBMIT WITH BID)

VENDOR WORK HISTORY

- A. The undersigned proposes to supply: _____.
- B. The undersigned offers the following information as evidence of his qualifications to perform the work as bid upon, according to all the requirements of the specifications.
1. Have been in business under present business name for _____ years.
 2. Are you fully licensed to do business under this contract? _____
 3. Do you comply with all ordinances and regulations mandated by M.G.L. and the community in which you are located? _____
 4. Ever fail to complete any work awarded? _____
 5. Have you been involved in litigation in the past five (5) years? _____
 6. List at least three (3) state, local or private companies and/or organizations which you have served recently of similar character as required for the above-mentioned.

<u>LOCATION</u>	<u>DATE</u>	<u>DESCRIPTION OF WORK</u>	<u>CONTACT INFO</u>
------------------------	--------------------	-----------------------------------	----------------------------

- | | | | |
|----|-------|-------|-------|
| 1. | _____ | _____ | _____ |
| 2. | _____ | _____ | _____ |
| 3. | _____ | _____ | _____ |

- C. Bidders shall indicate firm date of delivery on receipt of contract and subsequent purchase order form the City of Brockton.

DELIVERY DATE: _____

COMPANY: _____

TYPED NAME: _____

SIGNATURE: _____

TITLE: _____

- D. Bidders shall note that this bid reflects all changes in addendum/amendment numbers:

CITY OF BROCKTON – CONTRACT APPENDIX H (SUBMIT WITH BID)

CITY OF BROCKTON

Pursuant to M.G.L. Chapter 30, Section 39s, I hereby certify, under the pains and penalties of perjury, that I am able to furnish labor in harmony with all other elements of labor employed in the work and that all employees employed on the worksite, or in work subject to the bid, have successfully completed at least 10 hours of OSHA approved training. I agree to submit documentation that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) that is at least 10 hours in duration. I further certify that any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) that is at least 10 hour in duration shall be subject to immediate removal.

Company Name

Typed Name of Person Authorized to Sign Bid

Written Signature of Person Authorized to Sign Bid

Title of Signatory

Company Address

Company Telephone

Company Fax Number

Date

If corporation, this page must be signed and sealed by a duly authorized officer.

If partnership, so state and give names of all partners.

If an individual, so state and sign.

Documentation of successful completion of said course must be provided with the submission of the first certified payroll report for each employee. Payment requisitions will NOT be reviewed without the required OSHA documentation.

Debarment Certification

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non-procurement programs from the Commonwealth of Massachusetts, the US Federal Government, and/or the City of Brockton. "Principal" means supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Chief Procurement Officer of the City of Brockton at any time during the period of the contract or prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the firm or its officers. This certification is a material representation of fact upon which reliance will be placed when making the proposal award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the City of Brockton, the contract will be cancelled and the proposal award revoked.

Firm Name

Address

City _____, State _____, Zip Code _____

Phone Number (____) _____

E-mail address _____

Signed by Authorized Firm Representative:

Print Name _____

Date _____

CITY OF BROCKTON – CONTRACT APPENDIX J (SUBMIT WITH BID)

LETTER OF INTENT FOR CONSTRUCTION SERVICES

This form is to be completed by the MBE and WBE and must be submitted by the General Contractor as part of the proposal. A separate form must be completed for each MBE and WBE involved in the project.

Project Title: _____ Project Location: _____

TO: _____
(General Contractor)

FROM: _____
(Please Indicate Status [] MBE or [] WBE)

° I/we intend to perform work in connection with the above project as (check one):

- [] An individual [] A partnership
[] A corporation [] A joint venture with: _____
[] Other (explain): _____

° It is understood that if you are awarded the contract, you intend to enter into an agreement to perform the activity described below for the prices indicated.

MBE/WBE PARTICIPATION

Description of Activity	Date of Project Commencement	\$ Commitment	% Total Cost
		\$	%

° The undersigned certify that they will enter into a formal agreement upon execution of the contract for the above referenced project.

GENERAL CONTRACTOR	MBE/WBE
(Authorized Original Signature) _____ Date _____	(Authorized Original Signature) _____ Date _____
ADDRESS: _____	ADDRESS: _____
TELEPHONE #: _____	TELEPHONE #: _____
FEIN: _____	FEIN: _____

Contract

**CITY OF BROCKTON
OFFICE OF PLANNING & ECONOMIC DEVELOPMENT
CONTRACT**

This Contract is made and entered into this _____ day of _____ by and between _____, a corporation duly organized by law and having a usual place of business at _____, the (“Contractor”), and the City of Brockton, Massachusetts (the “Owner”).

WHEREAS, the Owner issued an Advertisement for Bids for the **New Street Roadway Construction & Petronelli Way Improvements** (the “Project”), dated _____; and

WHEREAS, the Contractor represents that it is duly qualified in this field, and has bid and offered to do all the work as required by the Owner for the Project; and

WHEREAS, the Owner has accepted the Contractor’s bid, subject to the conditions of this Contract.

NOW, THEREFORE, it is agreed by and between the Owner and the Contractor, as follows:

1. GENERAL

1.1 **CONTRACT DOCUMENTS** –The Contract comprises the following documents, including all additions, deletions and modifications incorporated therein before the execution of the Contract: Legal and Procedural Documents, Advertisements for Bids, Instructions to Bidders, all Bidding Documents, Contract Forms, this Contract, Specifications, Drawings, General and Sub-Bid Forms, Certificates of Bidders, Labor and Materials Payment Bond and Performance Bond, Prevailing Wage Rates, all addenda issued prior to execution of the contract, other documents listed and referenced throughout, and any Modifications validly issued after execution of the Contract.

1.2 **MODIFICATION** – A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work. No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever other than by a definitely agreed waiver or modification thereof in writing.

1.3 **THE CONTRACT** –The Contract Documents represent the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract Documents may be amended or modified only by a Modification. Nothing contained in the Contract Documents shall be construed to create any contractual relationship (1) between the Engineer and the Contractor, (2) between the Owner or the Engineer and a Subcontractor or (3) between any persons or entities other than the Owner and the Contractor.

1.4 THE WORK – The term “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.5 THE PROJECT – The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.6 THE DRAWINGS – The Drawings are the graphic and pictorial portions of the Contract Documents, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

1.7 THE SPECIFICATIONS – The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, and workmanship for the Work, and performance of related services.

2. CONTRACT SUM

2.1 Payments under this Contract shall not exceed _____ Dollars (the “Contract Sum”). The Contractor’s Schedule of Values will be utilized for the Contractor’s Payment Requests but shall only be so utilized after it has been approved in writing by the Engineer, and the Owner.

2.2 The Contract Sum is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

3. EXECUTION, CORRELATION AND INTENT

3.1 The Contractor shall perform all the Work required by this Contract in conformity with the plans and specifications contained and referenced herein. No willful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the Owner.

3.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. The Contractor shall have a continuing duty to read, examine, review, compare and contrast each of the Contract Documents, shop drawings, and other submittals throughout the Work and shall give written notice to the Owner of any conflict, ambiguity, error or omission which the Contractor may find with respect to these documents before proceeding with the affected portion of the Work. The express or implied approval by the Owner or the Engineer of any shop drawings or other submittals shall not relieve the Contractor of the continuing duties imposed hereby, nor shall any such approval be evidence of the Contractor’s compliance with this Contract. The City has requested the Engineer to only prepare documents for the Project, including the plans and specifications for the Project, which are accurate, adequate, consistent, coordinated and sufficient for construction. However, the City makes no representation or warranty to the Contractor concerning such documents.

3.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contractor shall provide and pay for, but not limited to, for the completion of the Work, all materials, labor, tools, construction equipment and machinery, water, heat, utilities, light, power, transportation, superintendence, temporary construction, fire protection, ventilation, enclosures of every nature, safety equipment, snow and ice removal and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the Work in accordance with the Contract Documents. The permanent heating and ventilation systems may, with the prior written approval of the Owner, be used for these purposes when available unless otherwise prohibited in the Contract Documents.

3.4 Any Work performed after regular working hours, on Saturdays, Sundays or legal holidays, shall be performed without additional expense to the Owner.

3.5 The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall include all Work incidental or reasonably inferable from the Contract Documents as being necessary to produce the intended results under the Contract Documents. All Work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others.

3.6 Anything shown on the Plans and not mentioned in the Specifications, or mentioned in the Specifications and not shown on the Plans, shall have the same effect as if shown or mentioned respectively on both.

3.7 Neither party shall take advantage of any obvious error or omission in the Contract Documents. Any apparent discrepancies shall be submitted to the Owner for determination. The decision of the Owner thereupon shall be conclusive.

3.8 The fact that specific mention of a fixture, or of any part of the work is omitted in the Specifications, whether intentionally or otherwise, when the same is clearly shown or indicated on the Plans, or is usually and customarily required to complete fully such work as is specified herein, shall not entitle the Contractor to consider action in the manner of any claim for extra compensation, but the said fixtures or work, or both, must be installed or done the same as if called for by both the Plans and Specifications.

3.9 In case of any inconsistency or conflict among the Contract Documents or within any of the Contract Documents, the Contract Documents shall be interpreted on the basis of the following priorities, with the later date of documents in each category to take precedence:

1. Modifications
2. Change Order
3. Construction Change Directives
4. Engineer's supplemental instructions
5. This Contract
6. Addenda
7. Advertisement for Bids and Instructions to Bidders
8. Drawings and Specifications

Further, in case of any conflict, discrepancy, or inconsistency among any of the following Contract Documents, the following shall control:

1. as between figures given on plans and scaled measurements the figures shall govern;
2. as between full size plans and reduced size plans, the full size plans govern;
3. as between plans and specifications, the requirements of the specifications shall govern;
4. as between this document and specifications, this document shall govern.

3.10 If any provision contained in this Contract or the application thereof to any person or circumstance shall, for any reason or to any extent, be held to be invalid, illegal or unenforceable in any respect, all other provisions hereof, as well as the application of the affected provision to persons or circumstances other than those as to which it is held invalid, illegal or unenforceable, shall not be affected thereby, and shall be construed and enforced to the fullest extent permitted by law as if such invalid, illegal or unenforceable provision had never been included herein; it being intended that each of the provisions of this Contract shall be severable.

3.11 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade, except the Contractor shall not divide the work of any filed sub-bid trade, bids for which have been received separately by the Owner in accordance with M.G.L. c. 149. The Contractor and all Subcontractors shall refer to all of the Drawings, and to all of the Sections of the Specifications, and shall perform all Work reasonably inferable as being necessary to produce the indicated results.

3.12 Any discrepancies found between the Drawings and Specifications and site conditions or any errors or omissions in the Drawings or Specifications shall be immediately reported to the Owner, who shall promptly correct such error or omission in writing. Any work done by the Contractor after discovery of such discrepancies, errors or omissions without notifying the Owner shall be done at the Contractor's risk.

3.13 Further instruction may be issued by the Owner during the progress of the work by means of Drawings or oral or written instructions to make more clear or specific the Drawings and Specifications or as may be necessary to explain or illustrate changes in the work to be done. The Contractor shall carry out the work in accordance with the additional Drawings and Instructions.

3.14 Unless otherwise stated in the Contract Documents, words and abbreviations that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

3.15 Where public or private standard specifications, codes, regulations, ordinance and similar publications of governmental agencies, technical societies, manufacturer's associations and regulatory groups or bureaus are referred to in these specifications, the applicable portion thereof shall be of the same effect as if fully printed herein, and the work done in full accordance therewith. The edition current as of the date of issue of this specification shall be used except where publication date is specifically stated.

3.16 Where no quality or standards for materials or workmanship are established, such Work is to be of good quality for the intended use and consistent with the quality of the surrounding Work and of the Construction of the Project.

3.17 Any Test boring or soil test information included in the Contract Documents or made available to the Contractor are not represented by the Owner nor the Engineer as an accurate or approximate indication of subsurface conditions, and no claim for extra costs or extensions of time resulting from reliance by the Contractor on such information shall be allowed except to the extent required by law.

3.18 All of the Contract Documents prepared and copies provided by the Owner and the Engineer are the property of the Owner. The Contractor, Subcontractor, Sub-subcontractor, or material or equipment supplier shall not use the Contract Documents for any other projects without written authorization of the Owner.

4. OWNER

4.1 The Owner, sometimes referred to as the Awarding Authority, the City of Brockton, or the City, is the City of Brockton, Massachusetts, and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. The Owner's representative shall, for the purposes of this Contract be the Owner's City Engineer. The term "Owner" means the Owner or the Owner's authorized representative.

4.2 The Owner and agents of the Owner shall have access to and be permitted to inspect all Work, materials, payrolls, records of personnel, invoices of materials and other relevant data and records whenever these are in progress of preparation. The Contractor shall provide proper and necessary facilities for such access and inspection. For the purpose of observing work that affects their respective properties, inspectors for public agencies and the utility companies shall be permitted access to the Work, but all official orders and directives to the Contractor will be issued only by the Owner.

4.3 In the event that the Contractor covers, conceals or obscures its work in violation of this Contract or in violation of a directive from the Owner or the Engineer, such work shall be uncovered and displayed for the Owner's or Engineer's inspection upon request, and shall be reworked at no cost in time or money to the Owner.

4.4 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings, Project Manuals, and Specifications as are reasonably necessary for execution of the Work. Information or services required of the Owner hereunder shall be furnished by the Owner with reasonable promptness after receipt from the Contractor of a written request for such information or services.

4.5 The Owner shall not be responsible for furnishing surveys or other information as to the physical characteristics of, legal limitations of or utility locations for the project site. Contractor shall confirm the location of each utility, shall excavate and dispose of each on-site utility and shall cap each off-site utility as required by the Work, any applicable law, and as may be included in the Specifications.

4.6 Owner does not warrant nor assume responsibility whatsoever of the accuracy or sufficiency of borings made, or logs of test borings, or other investigations, or the interpretations therefrom, and no warranty or guaranty, express or implied, that the conditions indicated by such investigation, borings, logs, or information are representative of existing conditions throughout the project site, or that unforeseen developments may not occur. At the Owner's request, the Contractor shall make available the results of any site investigation, test borings, analysis, studies or other tests conducted by or in possession of the contractor or any of the Contractors agents.

4.7 The Contractor represents that it is familiar with the Project site and has received all information required concerning the conditions of the Project Site. The Contractor represents that it has inspected the locations of the subsurface conditions. The Contractor shall undertake further investigations and studies as may be necessary to determine surface and subsurface conditions. Based on these inspections and understandings, agreements and acknowledgements, the Contractor agrees that (1) the Contract Sum is just and reasonable compensation for all of the Work, including all foreseeable risks, hazards, difficulties in connection therewith, (2) that the deadlines for completion of work and the Work under the Contract Documents are feasible to achieve, and (3) that the Work shall not result in any lateral or vertical movement of any structure. The Contractor shall, except to the extent required by law, have no claims for surface or subsurface conditions encountered. The Contractor shall exercise care in executing subsurface Work in proximity of known subsurface utilities, improvements, and easements.

4.8 The Owner shall be liable to the Contractor only to the extent of its interest in the Project, and no officer, official, employee, board member, consultant, volunteer participant or agent of the Owner shall ever be personally or individually liable with respect to this Contract or the Work. Each Subcontract shall include the foregoing limitation, which shall be effective if the Owner ever succeeds to the Contractor's rights and obligations under a Subcontract.

5. OWNER'S RIGHT TO STOP WORK AND/OR CARRY OUT THE WORK

5.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents or fails to carry out the Work in accordance with the Contract Documents, the Owner by immediate written order signed personally or by its authorized agent, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

5.2 Alternatively, if the Contractor fails, defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Engineer at the Owner's direction to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, perform the Work using its own forces or hire one or more contractors to correct such deficiencies. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Owner's and the Engineer's additional services and expenses made necessary by such default, neglect, or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

5.3 The Owner shall have the right to suspend the work or any portion thereof at any time for a period less than fifteen (15) days without charge or cost by the Contractor for time delay provided that the Owner gives the Contractor written notice of suspension of work. The Contractor shall resume the work upon written notice from the Owner and for a period less than fifteen (15) days after the date set forth in the notice of suspension.

5.4 In the event of temporary suspension of work or during inclement weather or whenever the Owner shall direct the Contractor and will cause subcontractors to protect carefully all the work and materials against damage or injury from the weather. If, in the opinion of the Owner any work or materials shall have been damaged or injured from the weather, by reason of failure on the part of the Contractor or any of the Contractor's subcontractors so to protect the work, such materials shall be removed and replaced at the expense of the Contractor.

5.5 The Owner shall have the authority to direct the Contractor not to correct work that has been damaged, or that was not performed in accordance with the Contract Documents. An equitable deduction from the Contract Amount shall be made to compensate the Owner for such uncorrected work. Such deduction shall be made whether or not final payment has been made under this Contract.

5.6 Owner's rights and remedies under this Article 4 shall be in addition to, and no in lieu of, any other rights and remedies it may have under this Contract or any applicable law.

6. SEPARATE CONTRACTS

6.1 The Owner reserves the right to perform construction or operations related to the Project under separate contracts, or with the Owner's own forces in connection with other portions of the Project or other construction or operations on the site under separate Contract.

6.2 The Contractor shall cooperate fully with separate contractors with regard to storage of materials and execution of separate contract work, and shall connect and coordinate the separate contractor's construction and operations with the Contractor's as required by the Contract Documents.

6.3 It shall be the Contractor's responsibility to inspect all separate contractor work affecting the Work and to report to the Owner any irregularities or defects that would not permit completion of the Work in a satisfactory manner or in the time permitted in the Contract Documents.

6.4 The Contractor shall immediately report to the Owner or Engineer any discrepancies or defects in a separate contractor's work that would be unsuitable for proper execution of the Work. The Contractor's failure to notify the Owner of such irregularities shall indicate the separate contractor's work has been satisfactorily completed to receive the Work.

6.5 It shall be the responsibility of the Contractor to measure the completed work in place and report to the Owner immediately any difference between completed work by others and the Drawings.

6.6 The Contractor shall not be responsible for defects in the separate contractors work of which could not then have been reasonably discovered by the Contractor.

6.7 Wherever work being done by the Owner's forces or by other contractors is contiguous to Work covered by the Contract, the respective rights of various interests involved shall be established by the Owner, to secure the completion of the various portions of the work in general harmony.

7. ENGINEER – ADMINISTRATION OF THE CONTRACT

7.1 The Engineer is the person or entity licensed to practice or engineering, who is responsible for performing the duties assigned to the Engineer by the Contract Documents.

7.2 The Owner, at the Owner's sole discretion, shall assume the responsibilities and role of the Engineer when an Engineer has been deemed unnecessary by the Owner for completion of the Work.

7.3 The Engineer's responsibilities and authority shall not take precedence over the Owner's rights and the Contractors obligations to fulfill the Contract Document requirements as set forth in the Contract Documents.

7.4 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized by the Owner, the Owner and Contractor shall communicate through the Engineer. Communications by and with the Engineer's consultants shall be through the Engineer. Communications by and with subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contract contractors shall be through the Owner.

7.5 The Engineer shall provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative during construction, until final payment is due and at the Owner's request, from time to time during the guaranty period. The Engineer will advise and consult with the Owner.

7.6 The Engineer will regularly visit the site, conduct job meetings, and keep the Owner informed of the progress and quality of the Work, and will endeavor to inform the Owner of defects and deficiencies in the Work. The Engineer's minutes of meetings shall be the official minutes kept on the Project. However, the Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Engineer will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as otherwise expressly provided herein.

7.7 Based on the Engineer's observations and evaluations of the Contractor's Applications for Payment, the Engineer will review and certify the amounts due the Contractor and will submit to the Owner for its review, consideration, and, if approval of Certificates for Payment in such amounts as the Engineer determines appropriate in accordance with the Contract Documents.

7.8 The Engineer shall reject Work that does not conform to the Contract Documents. Whenever the Engineer considers it necessary or advisable to achieve the intent of the Contract

Documents, the Engineer will have authority to require additional inspection or testing of the Work.

7.9 The Engineer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking such submittals for conformance with the information given and the design concept expressed in the Contract Documents. The Engineer's review shall be in accordance with the provisions and the procedures described in the Contract Documents and shall not relieve the Contractor from compliance with the requirements of the Contract Documents.

7.10 The Engineer will prepare Change Orders and Construction Change Directives for the Owner's approval and execution. The Engineer may authorize Minor Changes in the Work.

7.11 The Engineer will conduct inspections to determine, in consultation with the Owner, the date or dates of Substantial Completion and the date of Final Completion, will receive and forward to the Owner for the Owner's review and records written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

7.12 The Owner may provide one or more project representatives to assist in carrying out the Engineer's responsibilities at the site.

7.13 The Engineer will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Engineer's written response to such requests will be made within time limits that will not affect the progress of the Work, but, in any event, within a thirty (30) day limit.

7.14 The Engineer's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents, subject to approval by the Owner.

7.15 The Owner may utilize the services of a Clerk of the Works for the Project. Except as authorized by the Owner, the Clerk of the Works shall have no authority for approvals or changes to the Work. The Owner's Clerk of the Works shall be on site at all times during regular working hours as defined in the Contract Documents. If the Contractor determines the need for additional hours outside of the regular working hours and receives authorization and, any required permits to perform work outside of the regular working hours, the Contractor shall be responsible for the additional costs associated with the Clerk's required services to be on site at all times during those hours not regular hours as identified in the Contract Documents. The reimbursement shall be based on the Clerk of the Works' hourly wage and benefits and shall be paid by means of a credit Change Order executed at the time of Final Completion.

8. CONTRACTOR

8.1 The Contractor is the person or entity identified as such in the Contract and is referred to throughout the Contract Documents as if singular in number. The Contractor shall designate in writing a representative who shall have the express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

8.2 Prior to starting Work and at frequent intervals during the progress, the Contractor shall carefully study and compare the Contract Documents with each other and with the information furnished by the Owner or Engineer and shall at once report to the Owner and Engineer any error, inconsistency or omission the Contractor may discover. If the Contractor proceeds with the Work without such notice to the Engineer, having discovered such errors, inconsistencies or omissions, or if by reasonable study of the Contract Documents the Contractor could have discovered such, the Contractor shall bear all costs arising therefrom.

8.3 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be immediately reported to the Owner and the Engineer.

8.4 The Contractor shall perform the Work in accordance with the Contract Documents.

8.5 Any claim by the Contractor or subcontractors that, in submitting their bid proposals, they did not include all items as shown in the Contract Documents, will be given no consideration for an adjustment. If any item is specified in a Section which would not normally furnish these items it shall be the responsibility of the Contractor to coordinate the situation with the Subcontractor, and if the item under consideration is not to be provided by the Subcontractor it shall be the responsibility of the Contractor to provide the work in question, without any additional cost to the Owner.

8.6 The Contractor shall begin and shall prosecute the work regularly, and without interruption after Notice to Proceed has been given by the Owner (unless otherwise directed in writing by the Owner) with such force as to secure the completion of the work, in an acceptable manner, within the time stated in the Proposal.

8.7 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordination of all portions of the Work. Where Contract Documents refer to particular construction means, methods, techniques, sequences or procedures or indicate or imply that such are to be used in the Work, such mention is intended only to indicate that the operations of the Contractor shall be such as to produce at least the quality of work implied by the operations described, but the actual determination of whether or not the described operations may be safely and suitably employed on the Work shall be the responsibility of the Contractor, who shall notify the Owner and Engineer in writing of the actual means, methods, techniques, sequences or procedures which will be employed on the Work, if these differ from those specified in the Contract Documents. All loss, damage, or liability, or cost of correcting defective work arising from the employment of any construction means, methods, techniques, sequences or procedures shall be borne by the Contractor, notwithstanding that such construction means, methods, techniques, sequences or procedures are referred to, indicated or employed by the Contract Documents, unless the Contractor has given timely notice to the Owner and Engineer in writing that such means, methods, techniques, sequences or procedures are not safe or suitable, and the Owner has then instructed the Contractor in writing to proceed with such means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor.

8.8 The Contractor shall be responsible to the Owner for the acts and omissions of the Contractor's employees, agents, Subcontractors and suppliers and the employees and agents of any of the foregoing, and any other entities or persons performing or supplying the Work.

8.9 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Engineer in the Engineers administration of the Contract, the activities or duties of an Owner's Project Manager (if any), or by tests, inspections or approvals required or performed by persons other than the Contractor.

8.10 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent work.

8.11 The Contractor shall exercise due care when working around all property bounds. Should any damage to a bound result from the actions of the Contractor, it shall be replaced and/or realigned by the Contractor as directed by the Owner. No further compensation will be due to the Contractor for the materials and labor required to re-establish the bound in its proper orientation.

8.12 The Contractor shall give all notices and comply with all Federal, State and local laws, ordinances and regulations in any manner affecting the conduct of the Work, and all such orders and decrees as exist, or may be enacted by courts, agencies, bodies or tribunals having any jurisdiction or authority over the Work.

8.13 The Contractor shall be responsible for the conduct and discipline of employees and/or any subcontractor or persons employed by subcontractors. All workers must have sufficient knowledge, skill and experience to perform properly the work assigned to them. Any foreperson or worker employed by the Contractor or subcontractor who, in the opinion of the Owner, does not perform the work in a skillful manner or appears to be incompetent or to act in a disorderly or intemperate manner shall, at the written request of the Owner and to the extent permitted by law, be discharged immediately and shall not be employed again in any portion of the Work without the approval of the Owner.

9. SUPERINTENDENCE

9.1 The Contractor shall employ a competent Project Manager and Superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work and until the date of Substantial Completion and for such additional time thereafter as the Owner may determine to be necessary for the full completion of the Work. The Superintendent shall be responsible for coordinating all the Work of the Contractor and the Subcontractors.

9.2 The Contractor shall remove the project manager or superintendent or assistants if requested to do so in writing by the Owner, and shall promptly replace such person with a competent person reasonably acceptable to the Owner. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be as binding as if given to the Contractor.

9.3 The Superintendent shall be licensed consistent with the Massachusetts Building Code. The Superintendent's resume shall be submitted to the Owner prior to commencement of

construction and must demonstrate to the Owner's reasonable satisfaction that the Superintendent has performed similar duties on previous construction projects similar to the Project.

9.4 The Contractor shall retain a competent registered professional engineer or registered land surveyor, acceptable to the Owner, who shall establish the exterior lines and required elevations of all buildings and structures to be erected on the site and shall establish sufficient lines and grades for the construction of associated work such as, but not limited to, roads, utilities and site grading. Said engineer or land surveyor shall certify as to the actual location of the constructed facilities in relation to property lines, building lines, easements, and other restrictive boundaries.

9.5 The Contractor shall conduct the engineering required for establishing grades, lines, levels, dimensions, layouts, and reference points for the trades; shall be responsible for maintaining bench marks and other survey marks; and shall replace any bench marks or survey marks which have been disturbed or destroyed.

9.6 The Contractor shall coordinate and supervise the Work performed by all Subcontractors to the end that the Work is carried out without conflict between trades and so that no trade causes delay to the general progress of the Work. The Contractor and all subcontractors shall at all times afford each trade, any separate contractor, or the Owner, every reasonable opportunity for the installation of Work and the Storage of materials.

9.7 The Contractor shall arrange for and attend job meetings with the Owner and the Engineer and such other persons as the Owner and the Engineer may require to be present. The Contractor shall be represented by a principal, the project manager, the superintendent, or other representative of the Contractor acceptable to the Owner. An authorized representative of any Subcontractor shall attend such meetings if the representative's presence is requested by the Owner or the Engineer.

10. SUBCONTRACTORS

10.1 A subcontractor, also referred to in the Contract Documents as a filed-subcontractor or sub-subcontractor, is a person or entity that has a direct contract with the Contractor or another Subcontractor to perform a portion of the Work. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

10.2 By written agreement, the Contractor shall require each subcontractor to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by those Contract Documents, assumes toward the Owner and the Engineer. The Contractor shall make available to each Subcontractor, prior to the execution of a subcontract agreement, copies of the Contract Documents to which the subcontractor will be bound, and shall further identify to the Subcontractor any terms and conditions of the subcontract agreement which may differ or be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors. The Owner shall have the right to

review the Contractor's standard form of subcontract and the content of all subcontracts and sub-subcontracts.

10.3 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that the assignment is effective only after termination of the Contract by the Owner for cause and only for those subcontract agreements which the Owner, in its sole discretion, accepts by notifying the Subcontractor and Contractor in writing. Such assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract. In the event of such assignment to and assumption by the Owner, the Subcontractor shall have no claim against the Owner or such third party for Work performed by such Subcontractor or other matters arising prior to termination of the Contract, and the Owner or such third party, as the case may be, shall be liable only for obligations to the Subcontractor arising after such assumption. This Section 9.3 shall serve as the instrument of assignment at such time as the assignment provided for above becomes effective. The Contractor agrees to include in each subcontract agreement the assent of each Subcontractor to such assignment of its subcontract agreement to the Owner, and to execute whatever instruments the Owner may request to confirm the assignment described in this Section 9.3.

10.4 The Contractor, as soon as practicable after award of the Contract, shall provide in writing to the Owner and Engineer the names of persons or entities, and business address (including those who are to furnish materials or equipment fabricated by a special design) proposed for each principal portion of the Work, or as specifically requested by the Owner or Engineer. The Engineer shall reply to the Contractor in writing stating whether or not the Owner has reasonable objection to any such proposed person or entity, the Owner shall not object to previously approved filed sub-bidders. Neither the Contractor nor the Subcontractor shall contract with a person or entity to which the Owner has made reasonable objection.

10.5 The applicable provisions of Massachusetts law shall apply to all subcontractors filed sub-contractors and sub-subcontractors and said law shall take precedence over any conflicting statements in the Contract Documents.

11. NOTIFICATIONS

11.1 Written notice shall be considered as served when delivered in person or sent by certified mail or courier service providing proof of delivery to the individual, firm or corporation or the last business address known to that person who serves the Notice. It shall be the duty of each party to advise the other parties to the Contract as to any change in business address upon completion of the Contract.

12. CONTRACT SECURITY

12.1 The Contractor shall furnish and maintain in force a labor and materials payment bond and a performance bond in an amount not less than one hundred percent (100%) of the Contract Sum as security for the performance of the Contract and payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract.

12.2 The sureties of all bonds shall be such surety company or companies as are approved by the Owner, and as are authorized to transact business in the Commonwealth of Massachusetts. An

attorney-in-fact who executes the required bonds for the surety shall affix a certified and current copy of the power of attorney.

12.3 If at any time the Owner, for justifiable cause, shall be or become dissatisfied with any surety or sureties, the Contractor shall within five (5) days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such an acceptable bond to the Owner.

12.4 The Contractor may list in its bid that any or all filed Subcontractors provide the Contractor with payment and performance bonds for the full 100% amount of the Subcontract. The costs for said bonds shall be the responsibility of the Contractor. Requirements relating to the Contract Security and Payment and Performance Bonds throughout the Contract Documents shall be applicable to the bonds and surety provided by the Subcontractors, for which verification, payment, and responsibility shall be with the Contractor.

12.5 In the event the Contractor lists in its bid that filed Subcontractors provide bonds, and subsequently waives the requirement, the Contractor shall provide the Owner with a certification that they understand if the filed subcontractor defaults or is terminated, the Contractor accepts full responsibility and costs related to said default or termination with a credit change order in an amount equal to the bond premium it would have paid had it required the filed Subcontractor to provide such bonds.

13. INDEMNIFICATION

13.1 The Contractor shall indemnify, defend with counsel acceptable to the Owner, and save harmless the Owner, the Engineer, and their officers, agents, servants and employees from and against any and all claims, demands, suits, proceedings, liabilities, judgments, awards, losses, damages, costs and expenses, including attorneys' fees, on account of bodily injury, sickness, disease or death sustained by any person or persons or injury or damage to or destruction of any property, directly or indirectly arising out of, relating to or in connection with the Work or any breach or failure of the Contractor to comply with the terms and conditions of the Contract Documents, whether or not due or claimed to be due in whole or in part to the active, passive or concurrent negligence or fault of the Contractor, the offices, agents, servants or employees and/or any other person or persons, and whether or not such claims, demands, suits or proceedings are just, unjust, groundless, false or fraudulent; and the Contractor shall and does hereby assume and agrees to pay for the defense of all such claims, demands, suits and proceedings. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person.

13.2 If a separate contractor sues or initiates an arbitration proceeding against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor who shall defend such proceedings at the Contractor's expense, and if any judgment or award against the Owner arises therefrom the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorneys' fees and court or arbitration costs which the Owner has incurred.

13.3 This Article shall survive the expiration or termination of this Contract.

14. INSURANCE

14.1 The Contractor shall not commence work under this Contract until the Contractor has obtained the following insurance coverage and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on the subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder. Certificates from the Contractor's Insurance carriers stating the coverage's provided, the limits of liability and expiration dates shall be filed with the Owner before operations are started.

1. Workmen's Compensation Insurance: Procure and maintain during the life of this Contract, Workmen's Compensation and Employer's Liability Insurance as required by State law for all employees to be engaged in work at the site of the project, and, in case of any such work sublet, Contractor shall require subcontractors similarly to provide Workmen's Compensation and Employer's Liability Insurance for all the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Insurance. The limit of liability for Employer's Liability Insurance shall be not less than \$500,000.00. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide and shall cause each Subcontractor to provide Employer's Liability Insurance with a limit of at least \$1,000,000 for each accident for the protection of such of employees as are not otherwise protected.
2. Contractor's General Liability and Property Damage Insurance: Procure and maintain during the life of this Contract, comprehensive Contractor's General Liability Insurance, with the Owner additional named insured, covering bodily injury, including accidental death, with limits of \$1,000,000 per person, \$1,000,000 per occurrence and property damage insurance with limits of \$1,000,000 per occurrence, including products and completed operations, explosion, collapse, (X/C/U) and Broad Form Property Damage Coverage. Provide a separate policy for completed operations for a period of two (2) years from date of Final Completion of the Project. Any policy issued shall include permission for partial or total occupancy by Owner within the scope of this Contract. Coverage shall also include an Owner's and Contractor's protective liability favoring the Owner and an umbrella of excess liability in the amount of \$2,000,000 (two million dollars) minimum.
3. Contractor's Automobile Liability Insurance: Procure and maintain during the life of this Contract Comprehensive Automobile Liability Insurance, including all owned, non-owned, and hired automobiles, with the Owner as additional named insured, covering bodily injury, including accidental death, with limits of \$1,000,000 per person, \$1,000,000 per occurrence and property damage with limits of \$1,000,000 per occurrence.

4. All-risk Insurance: Procure and maintain during the life of this Contract All-Risk Builder's Risk Insurance on a 100% completed value basis, with the Owner named as an insured as the Owners interests may appear. In the event of paid claims, the Contractor shall bear the costs of any amounts deductible under the policy.
5. Property Insurance: Procure and maintain during the life of this Contract Property Insurance in the amount of the Contract Sum, and subsequent modifications to include all components, portions, and full coverage of the Work including Boiler and Machinery Insurance at the site on a replacement cost basis. Property insurance shall include portions of the Work stored off site or in transit. The Insurance shall include interests of the Owner, the Contractor, and Subcontractors and sub-subcontractors in the Work.

14.2 All such insurance shall be provided by a Best 'A' rated company lawfully authorized to do business in the Commonwealth of Massachusetts. The Owner shall be named as an additional insured under all policies. In the event of paid claims under all policies the Contractor shall bear the cost of all and any deductibles. The Insurance Policies shall not conflict with the Contract Documents and shall allow for the Owner's partial or total occupancy by Owner within the scope of the Contract Documents.

14.3 Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the Contract and shall operate as an immediate termination thereof.

14.4 All policies shall be so written that the Owner will be notified in writing of cancellation or restrictive amendment at least thirty (30) days prior to the effective date of such cancellation or material amendment. Renewal certificates must be furnished by the Contractor prior to the expiration date of any of the initial insurances.

14.5 If a loss occurs under any of the insurance policies required by the Contract Documents, insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear. The Contractor shall pay Subcontractors their shares of insurance proceeds received by the Contractor, and by agreements, written where legally required for validity, and shall require Subcontractors to make payments to their sub-subcontractors.

15. PERMITS AND FEES

15.1 The Contractor shall secure any and all permits, licenses, and fees required for the proper execution of the Work. The Contractor shall coordinate all efforts required to obtain said permits.

15.2 If the Contractor observes that portions of the Contract Documents are at variance with any permit conditions, the Contractor shall promptly notify the Engineer and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

15.3 If the Contractor performs Work knowing it to be contrary to any permit or license condition, or any laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Engineer and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

16. TAXES

16.1 The Contractor shall not pay, and the Owner shall not reimburse or pay the Contractor for, any sales taxes on building supplies or materials for which an exemption is provided pursuant to M.G.L. c. 64H, § 6(f).

17. ASSIGNMENT

17.1 Neither the Contractor nor the Owner shall sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or the right, title or interest therein, or the obligations hereunder, without written consent of both the Contractor and the Owner. If the Contractor attempts to make such assignment, the Contractor shall nevertheless remain legally responsible for all obligations under the Contract.

18. TIME

18.1 The Contractor agrees that time is of the essence of each and every portion of the Contract Documents and wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any Work, the new time limit fixed by such extension shall be of the essence of this Contract.

18.2 The date of commencement of the Contract shall be **August 23, 2021** unless otherwise fixed in a Notice to Proceed from the Owner.

18.3 The Contractor shall notify the Owner at least five days prior to starting the Work. The Contractor shall coordinate the Work and proceed with adequate forces and shall be required to obtain Completion within the time set in the Contract Documents.

18.4 Prior to commencement of the Work, the Contractor shall meet in conference with representatives of the Owner and Engineer to discuss and develop mutual understandings relative to administration of the quality assurance program, safety program, labor provisions, the schedule of Work, and other Contract procedures.

18.5 The date of Substantial Completion is the date certified by the Engineer and approved by the Owner. The Contractor shall achieve Substantial Completion of the entire Work no later than **December 15, 2021**.

18.6 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Engineer, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by other causes that the Engineer determines may justify delay, then, by Change Order, the Contract Time may be extended for such reasonable time as the Owner determines, and the Contract Sum shall be adjusted by the amount of the actual, direct, increased costs incurred by the Contractor during such extended time; provided, however, that the Contractor shall not be entitled to an extension of time due to an act or neglect of the Owner or the Engineer unless the Contractor has first provided timely written notice to the Owner and the Engineer that the act or neglect of the

Owner or Engineer, as applicable, is adversely affecting the commencement or progress of the Work.

18.7 Change Order Requests for Extension of Time based on seasonal variations in the weather shall be denied. Conditions of the weather are solely at the risk of the Contractor.

18.8 Failure to notify the Engineer in writing of any delay shall preclude the Contractor from subsequently claiming any damages due to said delay.

18.9 Notwithstanding the above, the following provisions of G.L. c. 30, § 39O shall govern, where applicable:

Chapter 30: Section 39O. Contracts for construction and materials; suspension, delay or interruption due to order of awarding authority; adjustment in contract price; written claim

Section 39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.”

18.10 It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the Contract Documents of the Work are Essential Conditions of this Contract; and it is further mutually understood and

agreed that the Work shall be commenced on a date to be specified in the Contract Documents or a Notice to Proceed.

18.11 The Contractor agrees that said Work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the Work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

18.12 If the said Contractor shall neglect, fail or refuse to complete the Work within the time herein specified, or any proper extensions thereof granted by the Owner, that the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the Owner the sum of \$500, not as a penalty but as liquidated damages for such breach of contract as herein set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents for completing the work.

18.13 The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain. The Contractor and/or the Contractor's surety shall be liable for and pay the Owner the sums stipulated as liquidated damages. These liquidated damages are not intended to limit the liability of the Contractor for actual damages that may exceed the amount of these liquidated damages.

19. CONTRACTOR'S CONSTRUCTION SCHEDULES

19.1 At least fifteen (15) days prior to commencement of the Work the Contractor shall submit to the Engineer a construction schedule in bar graph form, satisfactory to the Engineer, showing in detail the proposed progress for the construction of the various parts of the Work, the proposed times for receiving materials required, and the interrelationship between the various construction operations and the percentage of completion and the dollar value of the completed work on the first day of each month for each section of the specifications and the entire Work. Submission of said schedule shall be a condition precedent to approval of the Contractor's first application for payment.

19.2 At the end of each month, or more often if required, the Contractor shall furnish the Engineer an updated schedule showing actual progress of the various parts of the Work in comparison with the originally proposed progress and payment schedules. If the Engineer raises any objections to progress or payment schedules submitted by the Contractor, the Contractor shall immediately address and resolve such objections to the reasonable satisfaction of the Engineer.

19.3 Whenever progress of the Work falls behind the planned schedule of construction as shown on the project schedule, the Contractor shall promptly notify the Owner and the Engineer and promptly advise the Owner of action being taken to return the Work to the planned schedule or to revise the schedule as necessary to maintain the Substantial Completion date, and such action shall

be indicated on the project schedule, which shall then be promptly re-submitted by the Contractor to the Engineer and the Owner for review and approval.

19.4 If the Owner determines that the progress of the Work has been materially delayed, or that the project schedule is in jeopardy of not being met, the Owner shall have the right to require the Contractor to take whatever steps are necessary to recover all or a portion of such delay. If and to the extent such delay is caused by any act or omission of the Owner or the Engineer or is otherwise beyond the control of the Contractor, the costs of such recovery shall be borne by the Owner; otherwise the costs associated with such recovery shall be borne by the Contractor and there shall be no increase in the Contract Sum on account of such recovery activities. The Contractor shall, within three (3) days after the Owner's request to take such action, notify the Owner and the Engineer in writing, and commence implementing the steps the Contractor proposes to take to effect such recovery, and provide the Owner, in a form acceptable to the Owner, a detailed recovery schedule setting forth the actions to be taken by the Contractor. If the Contractor disputes any direction given by the Owner pursuant to this paragraph, it shall have no right to refuse to accelerate the Work, but the Contractor shall have the right to make a Claim for additional costs in accordance with the provisions of the Contract Documents. Notwithstanding anything in this Contract to the contrary, if the Contractor fails or refuses to accelerate the Work after its receipt of the Owner's direction to do so, the Contractor shall be liable to the Owner for the Owner's actual damages incurred or accruing on each day the Contractor fails to recover, beginning on the date on which the Owner directed the Contractor to accelerate. Nothing herein shall limit any other rights or remedies that the Owner may possess under other provisions of the Contract Documents or by law.

19.5 If the Contractor submits a construction schedule that anticipates Substantial Completion before the date established in the Owner's Notice to Proceed, the Contractor shall have no claim for additional compensation on account of any delays that prevent Substantial Completion before the date set in said Owner's Notice to Proceed.

19.6 The Owner's approval of any submission of a schedule or a schedule update shall be limited to a determination that the schedule or update represents a reasonable plan for completion of the Work within the Contract Time, and such approval, or lack thereof, shall not limit or modify any of the Contractor's obligations under the Contract Documents. The Contractor shall comply with the schedule most recently approved by the Owner.

19.7 The Contractor shall prepare and keep current for the Engineer's approval, a schedule of submittals which is included in the Contractor's construction schedule and allows the Engineer reasonable time to review submittals.

20. SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

20.1 The Contractor shall submit to the Engineer samples required in the Contract documents or as required by the Owner or Engineer for approval. Samples shall be furnished so as not to delay fabrication, allowing the Owner reasonable time for the consideration of the samples submitted. Contractor shall furnish such samples of materials, and workmanship shall be in accordance with approved samples.

20.2 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, manufacturer, supplier, or distributor to illustrate a portion of the Work.

20.3 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor or its Subcontractors and suppliers to illustrate materials or equipment for some portion of the Work.

20.4 Samples are physical examples which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.

20.5 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submission is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

20.6 The Contractor shall review, approve, and submit to the Engineer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Engineer without action. The Contractor's attention is directed to the provisions of "Or Equal" Submissions/Substitutions of the Specifications.

20.7 The Contractor shall prepare and keep current, for the Engineer's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Engineer reasonable time to review submittals.

20.8 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Engineer. Such Work shall be in accordance with approved submittals.

20.9 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified field construction criteria, materials, field measurements, quantities, relations to existing Work, coordination with Work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, Samples, or similar submittals and verification of compliance with all of the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the Contractor. In reviewing Shop Drawings, Product Data, Samples, and similar submittals the Owner and Engineer shall be entitled to rely upon the Contractor's representation that such information is complete and accurate.

20.10 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's or Owner's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Owner and Engineer in writing of such deviation at the time of submittal and the Owner has given explicit written approval to the specific deviation. The Contractor shall not be relieved of responsibility

for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the Engineer's or Owner's actions.

20.11 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Engineer on previous submittals.

20.12 Informational submittals upon which the Engineer is not expected to take responsive action may be so identified in the Contract Documents.

20.13 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Engineer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

21. "OR EQUAL" SUBMISSIONS/SUBSTITUTIONS

21.1 Except where a product has been specified as a proprietary material, the words "or approved equal" are understood to follow the name of any maker, vendor, or product specified to be used in the Contract Documents. To determine if the materials or articles proposed by the Contractor are equal to those specified, the Engineer shall determine whether the materials or articles proposed are at least equal in quality, durability, appearance, strength and design to the material or articles named or described, and will perform at least equally the functions imposed by the design for the Work; and conforms substantially, even with deviations, to the detailed requirements for the items as described in the Specifications.

21.2 If the Contractor proposes to use a material or item of equipment which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the Contractor shall inform the Engineer in writing of the nature of such deviations at the time the material or item of equipment is submitted for approval, and shall request written approval of the deviation from the requirements of the Contract Documents.

21.3 By making requests for substitutions, the Contractor:

1. represents that it has personally investigated the proposed substitute product and determined that it meets the conditions specified in Section 20.1;
2. represents that it will provide the same warranties and guarantees for the substitute product that it would for that specified;
3. certifies that all cost data presented with respect to the proposed substitution are accurate and complete and include all related (direct and indirect) costs under the Contract, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
4. will coordinate the installation of the substitute, if approved, making such changes as may be required for the Work to be complete in all respects.

21.4 In requesting approval of deviations or substitutions, the Contractor shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will meet the conditions set forth in Section 20.1. If, in the opinion of the Engineer, the evidence presented by the Contractor does not provide a sufficient basis for such reasonable certainty, the Engineer may reject such substitution or deviation without further investigation.

21.5 The Engineer will not approve as equal to materials or equipment specified proposed substitutions which, in the Engineer's opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the Project. In order to permit coordinated design of color and finishes the Contractor shall, if required by the Engineer, furnish the substituted material in any color, finish, texture, or pattern which would have been available from the manufacturer(s) originally specified, at no additional cost to the Owner.

21.6 Any additional cost, or any loss or damage arising from the substitution or proposed substitution of any material, equipment or method for those originally specified shall be borne by the Contractor, including, without limitation, the Owner's and Engineer's costs in evaluating substitutions whether or not approved, costs of any structural, mechanical or other changes necessary to accommodate substituted materials or equipment, and costs of modifying design documents and other additional design fees, notwithstanding approval or acceptance of such substitution by the Owner or the Engineer, unless such substitution was made at the written request or direction of the Owner or the Engineer. If any approved substitution results in a cost savings, the Owner shall be entitled to a credit, reducing the Contract Sum, in an amount equal to the net reduced cost of the substituted material or equipment after taking into account such related costs.

22. SAMPLES AND TESTS

22.1 Materials to be used in the Work may be tested or inspected after reasonable notice by the Engineer and may be rejected. Except as otherwise provided in the Contract, all the cost of testing of material that fail the criteria shall be borne by the Contractor. If the Contractor requests permission to use a material that was not specified in the Contract Documents and the Engineer requires testing of such material before approving its use, the Contractor shall pay for such testing.

22.2 The source of material proposed by the Contractor shall be designated in time to permit all required testing and inspection before the material is needed for incorporation into the Work. The Contractor shall have no claim for delays due to testing if the Contractor fails to designate the proposed source or to order the material in time to provide for adequate testing and inspection. Necessary arrangements shall be made to permit the Engineer to make factory, shop, or other inspection of materials or equipment ordered for the Work, in process of manufacture or fabrication, or in storage elsewhere than the site of the Work.

22.3 The Contractor shall furnish the Engineer with samples of the materials it proposes to use in the execution of the work in sufficient time to afford the Engineer the opportunity to adequately review and, if necessary, arrange for testing of such materials.

23. DOCUMENTS AND SAMPLES AT THE SITE

23.1 The Contractor shall maintain at the site of the Work for the Owner one record copy of this Contract and of the Drawings, Specifications, Addenda, Change Orders and other Modifications,

in good order and marked currently to record field changes and selections made during the construction, and one record copy of approved Shop Drawings, Product Data, Samples, and similar submittals. These shall be available to the Engineer and Owner and shall be delivered to the Engineer for submittal to the Owner upon completion of all the Work of the Project. The Contractor shall be responsible for assuring that the progress of the Work and all revisions are delineated on record Drawings by the specific trades involved on a current basis. The Owner and the Engineer shall have access to such as-built Drawings at all times. When final as-built Drawings are found by the Engineer to be complete, the Contractor shall furnish to the Engineer the record set of "as-built" Drawings in hard copy reproducible format with each sheet clearly marked "Record Drawing" and dated, and Specifications reflecting the actual conditions of the Work, together with a copy of such as-built plans on diskette in the AutoCAD format or such other format as the Owner may require. Delivery by the Contractor of the final as-built Record Drawings shall be a condition to final payment, and furnishing of the Record Drawings may be carried on the punchlist with a value determined by the Owner.

24. USE OF SITE – DELIVERY AND STORAGE OF MATERIALS

24.1 The right of possession of the premises and the improvements made thereon by the Contractor shall remain at all times in the Owner. The Contractor shall confine the Contractor's apparatus, storage of materials, and operations of Contractor's workmen to limits indicated by law, ordinances, Contract Documents, permits, and directions of the Owner and shall not unreasonably encumber the premises. The Owner shall not be liable to the Contractor, the Subcontractors, their employees or anyone else with respect to the conditions of the premises.

24.2 Notwithstanding the designation of contract limits or the indication of temporary fences or barricades, the provisions of the Contract Documents governing certain phases or portions of the Work may require that certain operations be carried out beyond such designated limits. Such Work, if required beyond such designated limits, shall be scheduled in such a manner as to cause a minimum of inconvenience or disturbance to or interference with the normal operations of the Owner, abutters and the public. The Contractor shall obtain the Owner's prior approval and all necessary approvals from abutters, public authorities and utility companies for such operations, prosecute such operations expeditiously and restore the affected area to its original condition immediately upon completion of such operations, unless otherwise specified in the Contract Documents. All existing walkways, roadways, paved or landscaped areas disturbed by construction or over which temporary driveways or walkways are rerouted shall be restored to their original condition, immediately upon completion of the related phases or portions of the Work, unless otherwise specified in the Contract Documents.

24.3 Materials and equipment shall be progressively delivered to the site so that there will be neither delay in the progress of the Work nor an undue accumulation of materials that are not to be used within a reasonable time.

24.4 Materials stored off-site shall be stored at the expense of the Contractor in a manner that preserves their quality and fitness for the Work. Material shall be placed on wooden platforms or other hard clean surfaces and not on the ground and shall be properly protected.

24.5 If the Contractor requests the Engineer's inspection of materials stored off-site, the Contractor shall assume the Engineer's reasonable costs for travel, room, and meals associated with such inspection.

24.6 Materials stored either at the site or at some other location agreed upon in writing shall be located so as to facilitate prompt inspection and may again be inspected prior to their use in the Work.

24.7 The Contractor shall take charge of and be liable for any loss of or injury to the materials delivered at or in the vicinity of the place where the Work is being done and shall notify the Engineer as soon as any such materials are so delivered and allow them to be examined by the Engineer.

24.8 The Contractor shall provide the Owner and Engineer access to the Work in preparation and progress wherever located.

25. CUTTING AND PATCHING

25.1 The Contractor shall do all necessary cutting and patching of the work that may be required to properly receive the work of the various trades or as required by the Drawings and Specifications to complete the Work. The Contractor shall restore all such cut or patched work as directed by the Owner. Cutting of existing structure that shall endanger the Work, adjacent property, workers or the public shall not be done unless approved and directly supervised by the Owner.

25.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

26. PROTECTION AND RESTORATION OF PROPERTY

26.1 The Contractor shall not enter upon private property for any purpose without obtaining permission, and shall be responsible for the preservation of all public property, trees, monuments, and signs, along and adjacent to the street or right-of-way, and shall use every precaution necessary to prevent damage or injury thereto.

26.2 The Contractor is solely responsible for the proper and safe operation and maintenance of all utility systems within the construction limits, whether these are supplied by the Owner's distribution system or otherwise, until the Work is accepted by the Owner, and until the Owner has notified the Contractor that other arrangements have been made. The Contractor shall maintain and operate appurtenances within the construction area, which serve the distribution system, subject to periodic inspection by the Owner's operating personnel. Inspection by any representative or personnel of the Owner shall not relieve the Contractor of responsibilities in connection with operation and maintenance of these facilities and equipment. The Contractor shall notify the Owner's representatives at least 72 hours in advance of the desire to extend, connect,

disconnect, turn on or off any steam, electric, water or other service from the authorized representatives of the Owner. All plumbing, heating, and electrical work, including installation of equipment and any other Work to be performed by the Contractor, shall be carried out without interference with the Owner's normal operation. Where any Work requires interruption of any service, the Contractor shall make advance arrangements with the Owner for dealing with such interruption.

26.3 The Owner will supply to the Contractor all water and electricity reasonably required for all construction requirements. Utilities furnished by the Owner will be discontinued if, in the opinion of the Owner, they are wastefully used. In such event, the Contractor shall supply thereafter all water and electricity required to complete the Work. The Contractor shall supply all hoses, extension cords and other tools necessary for the proper installation of the Work.

26.4 Adequate toilet facilities for use during construction will be supplied by the Owner. The Contractor shall leave sanitary facilities as clean as they were at the start of the Work.

26.5 The Contractor shall provide adequate facilities to keep the Site secure at all times when the Contractor's personnel are not present, from commencement of the Work until Substantial Completion, to assure that the Work, all materials and equipment stored at the Site, and all other property of the Owner located within the site limits or within other areas occupied or controlled by the Contractor, are fully and completely protected against loss or damage due to vandalism, theft, malicious mischief, pilferage or unexplained disappearance. If the Contractor fails to comply with the requirements of this Subsection 25.5, then the Owner may provide appropriate security, and charge the cost thereof to the Contractor. The Owner's provision of such security, or failure to do so, shall not relieve the Contractor of its sole responsibility to pay for loss or damage to such property due to vandalism, theft, malicious mischief, pilferage or unexplained disappearance, to the extent not covered by the Owner's insurance.

26.6 The Contractor shall arrange for and provide all police details required by the City of Brockton Police Department to be present at or adjacent to the site for traffic control purposes. The cost of police details so required shall be borne by the Contractor and is included in the Contract Sum.

26.7 The Contractor shall take all other necessary precautions and be responsible for any requirements and fees associated with adequate protection and safety of the site during construction and completion of all contract work, if necessary, to include temporary fencing, signs, barriers, in accordance with the Massachusetts State Building Codes, federal regulations, and local bylaws.

26.8 The Contractor shall keep the Owner's property free at all times from accumulations of waste materials or rubbish and shall remove from the Owner's property, and from all public and private property, all temporary structures, rubbish and waste materials resulting from the operation or caused by the employees, and shall remove all surplus materials resulting from the operation or caused by the employees, leaving the site smooth, clean and true to line and grade. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor for its costs associated therewith.

26.9 The Contractor shall at the termination of this Contract, before acceptance of the work by the Owner, remove all of equipment, tools and supplies from the property of the Owner. Should the Contractor fail to remove such equipment, tools and supplies, the Owner shall have the right to remove and dispose of them, and the Contractor shall pay all costs incurred by the Owner in removing and disposing of them. The Owner shall not be responsible for storing or maintaining such items not properly removed or disposed of from the site.

27. SUBSURFACE INVESTIGATIONS

27.1 If, during the progress of the Work, the Contractor or the Owner discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents, either the Contractor or the Owner may request an equitable adjustment in the contract price of the contract applying to Work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a Contractor, or upon its own initiative, the Owner shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the Owner shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

27.2 The Drawings and Specifications indicate all utilities at and adjacent to the site of which the Owner is aware. However, the Owner makes no representation or warranty that pipes, conduits, lines or other structures or equipment of public and private utility companies (“utility equipment”) shown on the Drawings or referred to in the Specifications are the only utility equipment that may be encountered. Prior to commencing Work, the Contractor shall visit the site and to the extent possible shall confirm the existence and location of all utility equipment and shall, during the course of the Work, make diligent and continuous efforts to confirm the locations of all utility equipment at and adjacent to the site. The Contractor shall promptly notify the Engineer in writing, prior to commencing affected portions of the Work, of any utility equipment that the Contractor discovers and that has not been identified on the Drawings. If and as directed by the Engineer, the Contractor shall make necessary arrangements with utility companies for the protection, alteration or relocation of utility equipment necessary in connection with performance of the Work, and shall notify all municipal departments and utility companies concerned of the time and location of any work which may affect them. The Contractor shall be responsible for all costs and all claims, damages and liabilities arising directly or indirectly from any damage to utility equipment or any intentional or unintentional interruption of service occurring in connection with the Work or other operations of the Contractor.

28. DISPOSAL AND HAZARDOUS MATERIALS

28.1 The Contractor shall dispose of any and all debris, waste, and soils, outside of the limits of the City of Brockton, including any and all material transported from the project site for disposal.

The Contractor shall handle, remove, and dispose of hazardous and chemical waste in accordance with all applicable laws. The Contractor shall make all arrangements and obtain any approvals necessary for said disposal from the owners or officials in charge of the applicable disposal sites and shall bear all cost, including fees resulting from such disposal, including tipping fees. Garbage shall be removed daily.

28.2 No open fire shall be permitted on site without the Owner's prior written permission.

28.3 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. 7 The term "Hazardous Materials" shall be "hazardous materials" as defined in M.G.L. c. 21E and "hazardous substances" as defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and the Superfund Amendments and Reauthorization Act of 1986, 42. U.S.C. Section 9601 et seq., as all such laws and statutes have been amended, and regulations promulgated pursuant to such laws and statutes.

28.4 The Contractor shall promptly remedy at its own expense damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under this Section 27, except damage or loss attributable to acts or omissions of the Owner or Engineer or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable. The foregoing obligations of the Contractor are in addition to the Contractor's obligations elsewhere in the Contract Document.

28.5 The Owner shall not be responsible for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

28.6 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under this Section 27, except to the extent that the cost and expense are due to the Owner's fault or negligence.

28.7 The Contractor shall install weather protection and provide adequate heat in the protected area from November 1 to March 31, at a minimum, as required by M.G.L. c. 149, § 44G.

28.8 Damages to materials in place or stored such as, but not limited to, deterioration, loss of material life cycle length, shrinkage, staining, warping, cracks, caused by inadequate Site and Weather Protection shall be immediately replaced at the Owner's or Engineer's request at the Contractor's expense.

28.9 The Contractor shall at all times protect excavations, trenches, buildings and materials, from rainwater, ground water, backup or leakage of sewers, drains and other piping, and from

water of any other origin and shall remove promptly any accumulation of water. The Contractor shall provide and operate all pumps, piping and other equipment necessary to this end.

28.10 The Contractor shall remove snow and ice which might result in damage or delay.

29. QUALITY OF MATERIAL

29.1 The Contractor warrants to the Owner and Engineer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly submitted, approved, and authorized may be considered defective. If required by the Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

29.2 The Engineer may reject materials if the Engineer reasonably determines that such materials do not conform to the Contract Documents. No rejected materials, the defects of which have been subsequently corrected, shall be used in the Work except with the written permission of the Owner. No extra time shall be allowed for completion of the Work due to the rejection of non-conforming materials.

29.3 The Engineer's inspection of the Work shall not relieve the Contractor of any of its responsibilities to fulfill the Contract obligations, and defective work shall be corrected. Unsuitable work may be rejected by the Owner, notwithstanding that such work and materials have been previously accepted for payment. If the Work or any part thereof shall be found defective at any time before the final acceptance of the whole Work, the Contractor shall forthwith correct such defect in a manner satisfactory to the Engineer, and if any material brought upon the site for use in the Work, or selected for the same, shall be rejected by the Engineer as unsuitable or not in conformity with the Contract requirements, the Contractor shall forthwith remove such materials from the vicinity of the Work.

29.4 Nothing in this Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the Work or the site of the Project; but all such materials shall, upon being so attached or affixed, become the property of the Owner.

29.5 All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved and reported immediately to the Owner and the Engineer for determination of appropriate actions to be taken. The Owner shall be the final decision factor in determination of items of historical or archaeological interest and may or may not take possession of said items, without charge or costs to the Owner.

30. WORK HOURS AND RATES

30.1 No laborer, worker, mechanic, foreperson or inspector working within this Commonwealth in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or part of the Work contemplated by the contract, shall be required or permitted to work more than

eight hours in any one day or more than forty-eight (48) hours in any one week, or more than six (6) days in any one week, except in cases of emergency.

30.2 Every employee under this contract shall lodge, board and trade where and with whom he elects, and neither the Contractor nor his agents or employees shall, either directly or indirectly, require as a condition of the employment of any person that the employee shall lodge, board or trade at a particular place or with a particular person.

30.3 The Contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wage paid to regular police officers in such city or town.

30.4 It is the obligation of the Contractor to assure that the Contractor and all of its subcontractors comply with the requirements of the Massachusetts Prevailing Wage Law, MGL c. 149 §26-27H. The Contractor shall be responsible for all loss, cost and damage suffered or incurred by the Owner as a result of any stop work order or other enforcement action taken by the Attorney General under the authority of MGL c.149 §27, and shall release, indemnify, hold harmless and defend the Owner, the Engineer, their officers, employees and consultants, from and against all claims, actions, suits, fines, or administrative proceedings arising out of or related to the violation by the Contractor or any subcontractor of the said Prevailing Wage Law (or, in the case of the Contractor's defense obligation, the claimed violation thereof). Unless otherwise expressly provided in the Contract Documents, all payroll records required to be submitted to the Owner shall be delivered to a designated employee of the Owner, and not to the Engineer. Minimum wage rates have been determined by the State and/or Federal Labor Department and the Contractor in payment of wages shall be bound by such schedules in the performance of the Work herein provided in the Contract Documents.

30.5 There shall be paid each laborer or mechanic of the Contractor or subcontractor engaged in the Work on the project under this Contract in the trade or occupation listed in the Prevailing Wage Rate sheets, not less than the hourly wage rate set opposite the same, regardless of any contractual relationship which may be alleged to exist between the Contractor or any subcontractor and such laborers and mechanics.

30.6 When both the State and Federal Wage Rate schedules are applicable to the Project, the contractor shall pay the higher of the two Wage Rates in the trade or occupation listed and provide the required certifications, statements of compliance, and weekly payroll reporting forms required for both the State and Federal wage rate paid.

30.7 Any laborer or mechanic employed to perform work on the project under this Contract, which work is not covered by any of the listed classifications, shall be paid not less than the minimum rate of wages specified herein for the classification which most nearly corresponds to the work to be performed, and such minimum wage rates shall be retroactive to the time of initial employment of such persons in such classification.

30.8 The scheduled wage rates are minimum rates only, and the Owner will not consider any claims for additional compensation made by the Contractor because of payment by the Contractor of any wage rate in excess of those specified in this Contract.

30.9 Except as may be otherwise required by law, all claims and disputes pertaining to the classification of labor employed on the project under this Contract shall be decided by the Owner.

30.10 The Contractor shall post appropriate conspicuous points at the site of the Project a schedule showing all determined minimum wage rates for the various classes of laborers and mechanics to be engaged in work on the project under this Contract and all deductions, if any, required by law to be made from unpaid wages actually earned by the laborers and mechanics so engaged.

30.11 The Contractor agrees that, in case of underpayment of wages to any worker under this Contract by the Contractor or subcontractors, the Owner may withhold from the Contractor out of payment due, an amount sufficient to pay such worker the difference between the wages required to be paid under this contract and the wages actually paid such worker for the total number of hours worked and that the Owner may disburse such amount so withheld by it for and on account of the Contractor to the employee to whom such amount is due. The Contractor further agrees that the amounts to be withheld pursuant to this paragraph may be in addition to the percentages to be retained by the Owner pursuant to other provisions of this Contract.

31. REPORTS, RECORDS AND DATA

31.1 The Contractor and each of the contractor's subcontractors shall submit to the Owner such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this Contract.

31.2 The Contractor and each subcontractor shall prepare payrolls on forms satisfactory to and in accordance with instructions to be furnished by the Owner. Each such payroll shall show, among other things, the total number of persons and of that number the total number of minority persons, on the payroll at skilled, semi-skilled and unskilled classifications employed by the Contractor or the subcontractor (as the case may be) upon the work covered by their Contract, the amount of each payroll and total man-hours worked for each such indicated grouping. The Contractor shall submit weekly to the Owner two certified copies of all payrolls of the Contractor and of the subcontractor. The certification with respect to each such payroll shall affirm that the payroll is correct and complete, that the wage rates contained therein for laborers and mechanics are not less than those applicable to such laborers and mechanics pursuant to this Contract, and that the classifications set forth for each laborer or mechanic conform with the work performed. The payroll records of the Contractor and each subcontractor covering all laborers and mechanics employed upon the Work shall be maintained during the course of the Work and preserved for a period of three years thereafter. Such payroll records shall contain the name and addresses for each such employee, the correct classification, rate of pay, daily or weekly number of hours worked, deductions made, and actual wages paid. The Contractor and each subcontractor shall make all employment records with respect to persons employed by the work covered by this Contract available for inspection by the Owner. The Owner shall be permitted to interview employees of the Contractor or any subcontractor during working hours on the job without claims of delay by the Contractor or subcontractor to the Owner.

32. CHANGES IN THE WORK

32.1 All changes in the work, including any increase, decrease, or other equitable adjustment in the Contract Sum or in the time for performing the Contract, shall be authorized in the form of one, or a combination of, the following written instruments: Change Order, Construction Change Directive, or a Minor Change in the Work. The term "equitable adjustment" as used in this paragraph shall include all adjustments to the Contract Sum or time to which the Contractor or the Owner is entitled pursuant to M.G.L. c.30 §§39N and 39O and such equitable adjustment shall be made in accordance with the provisions of this Article.

32.1.1 A Minor Change is a written order binding on the Contractor issued by the Engineer, with the concurrence of the Owner, not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. The Contractor shall carry out such written orders promptly.

32.1.2 A Change Order is a written instrument prepared by the Engineer and signed by the Owner, Contractor, and Engineer, stating their agreement regarding a change in the work, including a change in the Contract Sum or Contract Time, without invalidating the Contract.

32.1.3 A Construction Change Directive is a written order prepared by the Engineer and signed by the Owner, and Engineer, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum, or Contract Time, or both. The Owner may, by Construction Change Directive, and without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted by Change Order, accordingly.

32.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Engineer; a Construction Change Directive requires agreement by the Owner and the Engineer and may or may not be agreed to by the Contractor; an order for a Minor Change in the Work may be issued by the Engineer with the concurrence of the Owner.

32.3 Change Orders and Construction Change Directives must be counter-signed by the Owner in order to be effective. When Change Orders and/or Construction Change Directives increase the cost of the Work, no obligation shall be incurred without a duly executed Purchase Order, issued and approved, in the amount of such increase.

32.4 Upon request of the Owner or the Engineer, the Contractor shall, without cost to the Owner, submit to the Engineer and the Owner, in such form as the Engineer may require, a "Change Proposal" including a full description of the character and scope of work involved in any proposed extra Work or change in the Work, an accurate written estimate of the cost of such proposed change including all elements of pricing in appropriate detail, and an explanation of the impact of the proposed change on the construction schedule. The cost estimate shall indicate the quantity and unit cost of each item of material or other product and the number of hours of Work and hourly rate for each class of labor, as well as the description and amounts of all other costs chargeable under the terms of this article. If required by the Engineer or the Owner, in order to establish the exact cost of new Work added or of previously required Work deleted, the Contractor shall obtain and furnish to the Engineer bona fide proposals (on letterhead) from Subcontractors, Sub-

subcontractors or recognized suppliers for furnishing labor and materials included in such Work, including the same supporting information. The Contractor shall promptly revise and resubmit such cost estimate if the Engineer or the Owner determines that it is not in compliance with the requirements of this article, or that it contains errors of fact or mathematical errors. The Contractor shall state in the Change Proposal any extension of the Contract Time that the Contractor believes is necessary if the change or extra Work is ordered or that the Contractor believes it is entitled to for any other reason. If the Contractor claims an extension of the Contract Time, the Contractor shall provide in the Change Proposal a full explanation of the need for a time extension with supporting documentation, including a schedule impact analysis (sometimes referred to as a time impact analysis) in form acceptable to the Owner and the Engineer indicating the activities affected and overall impact on the schedule of the proposed change.

32.5 Change Proposals shall be furnished promptly so as to occasion no delay in the Work, and shall be furnished at the Contractor's expense. By submitting a Change Proposal, the Contractor shall be deemed to certify in writing that the Change Proposal includes all Work affected by the change, that the cost estimate indicated in the Change Proposal includes all direct, supplemental, indirect, consequential, serial and cumulative costs and delays, as applicable, and that those costs and delays would be necessarily incurred if the change or extra Work is ordered, despite the Contractor's commercially reasonable and diligent efforts to mitigate them. The Contractor shall cooperate fully with the Owner and the Engineer to provide sufficient substantiation and explanation of costs and schedule impacts to allow the Owner and the Engineer to reasonably evaluate the Change Proposal.

32.6 If the Contractor believes that a change has occurred by reason of any Work performed or materials furnished or by reason of any direction or interpretation by the Owner or the Engineer or by reason of any other event, circumstance or occurrence, the Contractor shall submit to the Owner a notice of claim or Contractor Change Notice and shall thereafter request that a Change Order be issued by submitting to the Owner a "Contractor Change Request" within ten (10) days of discovery of the need for the change reflected in the Contractor Change Requests. A Contractor Change Request shall be expressly identified as such and shall contain, at a minimum, the information and certifications required to be included in a Change Proposal. Without limitation, a Contractor Change Request must detail the character and scope of the Work involved and provide clear and detailed justification that a change has occurred or that the Contractor is otherwise entitled to an adjustment in the Contract Sum or the Contract Time, and shall include the applicable Contract Document references supporting the Contractor's claim and the efforts taken and to be taken by the Contractor to prevent or minimize costs or schedule extension. All Contractor Change Requests submitted by the Contractor shall provide sufficient detail for the Owner to understand the basis for the adjustment in compensation or schedule extension requested. The Contractor shall furnish, within five (5) days after request from the Owner or the Engineer, such further information and details including but not limited to books of account, records and other documents of the Contractor or its Subcontractors or Sub-subcontractors as may be required by the Owner or the Engineer to determine the facts or issues involved in the Contractor Change Request. The Contractor's failure to deliver such information shall be sufficient cause for rejecting any Contractor Change Request. If the Owner fails to notify the Contractor as to the Owner's determination with respect to a Contractor Change Request within thirty (30) days after receipt by the Owner of a full and complete Contractor Change Request as provided herein, such failure shall be deemed to constitute a determination by the Owner that no change has occurred, and such

deemed determination shall be effective as of the last day of such thirty-day period. If the Owner rejects (or is deemed to have rejected) a Contractor Change Request in whole or in part and the Contractor disputes such rejection, such dispute shall be resolved as provided in Article 35. Failure of the Contractor to comply strictly with the notice requirements and time periods set forth in Article 34 and this Article 32 shall be conclusively deemed to constitute a waiver by the Contractor of any Claim or any other right to an adjustment in the Contract Sum or the Contract Time with respect to any Work or any other occurrence, event or circumstance which is the subject of a Contractor Change Request, Change Proposal or other Claim of the Contractor.

32.7 This contract shall not be deemed to have been made until the auditor or accountant or other officer of the Owner having similar duties has certified thereon that an appropriation in the amount of this contract is available therefore and that an officer or agent of the Owner has been authorized to execute said contract and approve all requisitions and change orders. No order to the Contractor for a change in or addition to the Work, whether in the form of a drawing, plan, detail or any other written instruction, unless it is an order which the Contractor is willing to perform without any increase in the contract price, shall be deemed to be given until the auditor or accountant, or other officer of the Owner having similar duties, has certified thereon that an appropriation in the amount of such order is available therefore; but such certificate shall not be construed as an admission by the Owner of its liability to pay for such Work.

32.8 The Contractor shall perform all work as directed by the Engineer and Owner, and if the Engineer and Owner determines that certain work for which the Contractor has requested a change order does not represent a change in the Work under the Contract, or if the Contractor, the Engineer, and the Owner cannot agree to the amount of compensation for a change order, the Contractor shall perform said work under protest and must follow the notice requirements and maintain the records required by Claims in the Contract Documents.

33. STATUTORY CHANGE ORDER PROVISIONS

33.1 IN addition to the foregoing, Contract may seek an equitable adjustment pursuant to Massachusetts General Laws Chapter 30, §39N, reproduced below, where applicable.

“Chapter 30: Section 39N. Construction contracts; equitable adjustment in contract price for differing subsurface or latent physical conditions

Section 39N. Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from

a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.”

34. TIMELY DECISION BY OWNER OR ENGINEER

34.1 Whenever this Contract requires the Owner or its Engineer to make a decision during construction of the Project, on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, that decision shall be made promptly and, in any event, no later than thirty days after receipt of a written submission for such decision by the Contractor; but if such decision requires extended investigation and study, the Owner or the Engineer shall within thirty days after the receipt of the submission, give the Contractor written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

34.2 The Contractor shall notify the owner in writing of a “Timely Decision” request that has not received response as required prior to the expiration of twenty-eight days of the written request.

35. CLAIMS AND DISPUTES

35.1 A Claim is a demand by one of the parties seeking adjustment or interpretation of Contract terms or contract documents, payment of money, or extension of time. Claims also include other disputes between the Owner and Contractor or the Contractor and the Engineer arising out of the Contract. Claims must be initiated by written notice to the Owner. The responsibility to substantiate a claim shall rest with the Contractor.

35.2 The Contractor shall notify the Owner within seven (7) days after occurrence of the event giving rise to any claim. The Contractor shall fully document and detail the factual and contractual basis of the Claim in writing to the Owner within thirty (30) days of the initial seven (7) day notification of claim. The Contractor shall have the burden of demonstrating the effect of the claim and shall furnish the Owner with such documentation and information as the Owner may reasonably require.

35.3 When a claim is resolved by a Change Order signed by the Owner and the Contractor, the Change Order shall represent the entire compensation, including without limitation all direct, indirect, consequential, and other costs, mark-ups, and damages and all extensions of time, owed to the Contractor for the events or circumstances giving rise to the claim.

35.4 Pending resolution of a claim or dispute, the Contractor must proceed with the disputed Work, as directed by the Engineer or the Owner. The Contractor must give written notice to the Owner and the Engineer stating that the Contractor is proceeding with the disputed work under protest. Accurate records of the nature and extent of the disputed Work and of the time spent,

labor, materials, and equipment used on the disputed Work shall be maintained by the superintendent and verified daily by the Owner or Engineer. Failure of the Contractor to maintain such records shall cause the Contractor to forfeit its claim to additional compensation for such disputed work.

35.5 Pending final resolution of Claims, unless agreed in writing by the Owner, the Contractor shall proceed diligently with the performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

35.6 The Owner will not be obligated under Claims to grant an extension of time unless the contractor can demonstrate that the critical path has been negatively affected.

35.7 The Owner shall resolve all Claims in the manner it deems appropriate and shall provide the Contractor with a written description of such resolution within thirty (30) days of receipt of the Claim. If the Owner cannot resolve the Claim within thirty (30) days, the Owner shall send a written notice to the Contractor. If the Owner fails to resolve a Claim within the thirty (30) days of receipt, or any extended period, or by final payment, the Claim shall be deemed to be denied by the Owner.

35.8 The Contractor, as a precondition to commencing litigation shall have fully complied with the requirements that its claim has been denied or deemed denied and that the Contractor has complied with all other applicable provisions of the Contract Documents, including those provisions that are applicable to the Work that is the subject of the Claim.

35.9 Notwithstanding any contrary provision of this contract, no decision by the Owner or by the Engineer on a dispute, whether of fact or of law, arising under said contract shall be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily, is unsupported by substantial evidence, or is based upon error of law.

36. SCHEDULE OF VALUES

36.1 Before the first Application for Payment, the Contractor shall submit to the Engineer a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Engineer or Owner may require. The Schedule of Values shall be approved by the Owner. This schedule, unless objected to by the Engineer or Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Contractor shall not imbalance its Schedule of Values nor artificially inflate any element thereof. The violation of this provision by the Contractor shall constitute a material breach of this Contract.

36.2 The schedule of values shall contain a separate item for each Section of the Specifications broken down in such form as the Engineer may require.

37. APPLICATIONS FOR PAYMENT

37.1 Retainage – The Contractor agrees that the Owner may retain all of the payments due, including final payment, under this contract, five percent (5%) of the amount thereof, and may expend the same, in the manner hereinafter provided, in making such repairs or replacements of said work as the Owner may deem expedient.

37.2 At least (30) days prior to the date established for progress payments, the Contractor shall submit to the Engineer an itemized Application for Payment for the Work completed consistent with the Contract Documents and the Schedule of Values including lien waivers from the Contractor and all subcontractors and suppliers and all other supporting documentation that the Owner may reasonably require. The Engineer's certification of said application shall signify that the Work has progressed to the point indicated and that, to the best of the Engineer's knowledge and information, the quality of the Work is in accordance with the Contract Documents. The Engineer's certification is subject to an evaluation of the Work for conformance with the Contract Documents prior to Substantial Completion, and subsequent results of tests and inspections, to correction of minor deviations from the Contract Documents and to specific qualifications expressed by the Engineer. The certification of the Application for Payment shall not eliminate the Contractor's requirements for the Work to comply with the Contract Documents at any time.

37.3 Such Application for Payment shall be notarized by the Contractor. Applications for payment shall not include requests for payments that the Contractor does not intend to pay to a Subcontractor or material supplier based on a dispute or any other reason. The Contractor shall certify that all previous certificates for payment have been previously issued and payments received from Owner, to the best of the Contractor's knowledge, are free of liens, claims, security interests, or encumbrances in the favor of the Contractor, subcontractors, material suppliers, or other persons or entities making a claim by having provided labor, materials, equipment relating to the Work. The Owner may request certification from subcontractors or a waiver of liens to this effect.

38. CERTIFICATES FOR PAYMENT

38.1 The Engineer shall mark the date of receipt on the Contractor's Application for Payment. The Engineer shall, within seven days after receipt of the Contractor's Application for Payment:

1. issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Engineer determines are properly due according to the terms of the Contract Documents;
2. return the application to the Contractor if it is not in proper form or containing computations not arithmetically correct;
3. make changes to the application; or
4. reject in whole or in part the application and notify the Contractor and Owner in writing of the Engineer's reasons for withholding certification in whole or in part. Such reasons may include, without limitation:
 - i. The quality of a portion, or all, of the Contractor's work not being in accordance with the Contract Documents;
 - ii. The quantity of the Contractor's work not being as represented in the Application for Payment;

- iii. The Contractor's rate of progress being such that, in the opinion of the Owner, Substantial or Final Completion, or both may be delayed or that the Work cannot be completed for the unpaid balance of the Contract Sum;
- iv. The Contractor's failure to use Contract funds, previously paid the Contractor by the Owner, to pay Contractor's Project-related obligations, including, but not limited to, subcontractors, laborers and material and equipment suppliers;
- v. Claims made, or likely to be made, against the Owner or its property;
- vi. Loss or damage cause by the Contractor;
- vii. Any lien or attachment not discharged as required under Section 38.4; or
- viii. Contractor's failure or refusal to perform any of its obligations under the Contract Documents.

38.2 The Owner may make changes in any Application for Payment submitted by the Contractor and the payment due on said Application for Payment shall be computed in accordance with those changes. The Owner may require the Contractor to resubmit the Application for Payment with the Engineer and the Owners corrections reflected. Such resubmitted Application for Payment shall be clearly marked a resubmittal and dated.

38.3 No certificate for payment nor any progress payment shall constitute acceptance of Work not in accordance with the Contract Documents.

38.4 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner upon the first to occur of (a) incorporation into the Work and (b) no later than the time of payment on such Application. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall , to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work. If a lien is filed or claimed against the Work by any Subcontractor, laborer, or supplier, the Contractor shall immediately, at its expense, bond such lien in accordance with Massachusetts General Laws, or otherwise cause such lien to be discharged in a manner acceptable to the Owner and its lender; provided, however, that the Contractor shall not be obligated to bond or discharge any such lien to the extent such lien is the result of the Owner's failure to make payment for the Work in accordance with the Contract. If the Contractor shall fail to do so, the Owner may, at its option and at the Contractor's expense, bond such lien or otherwise cause it to be discharged, and deduct all amounts so paid from the Contract Sum or from the next succeeding Application(s) for Payment until the total amount of same is recouped by the Owner.

38.5 No portion of the Contract Sum will be obligated for payment of costs incurred with respect to any action of the project after the Owner has requested that the Contractor furnish data concerning such action prior to proceeding further, unless and until the Contractor is thereafter advised in writing by the Owner that there is no objection to so proceeding.

38.6 The Contractor agrees to refund to the Owner, payment which the Owner determines were not properly due to the Contractor under the terms of the Contract Documents.

39. PAYMENT FOR STORED MATERIALS

39.1 The Contractor shall include in such Application for Payment only such materials as are incorporated in the Work. Except however, the Contractor may, with prior written authorization of the Owner, include the value of materials or equipment delivered at the site of the Work, or at some location agreed to in writing by the Owner and Engineer and that shall be suitably stored and within 25 miles of the Project and accessible for inspection and testing as determined to be necessary by the Engineer and Owner, upon delivery to the Owner of:

1. a Transfer of Title in a form acceptable to the Owner; and
2. a receipt of payment by the Contractor for stored materials and equipment charges for storage, insurance or encumbrances, and transportation costs to the Project, and
3. a receipted invoices or other acceptable proof of prior payment by the Contractor for such materials or equipment; and
4. a stored materials insurance binder that covers the materials for which payment is requested, that names the Owner as an insured party should the stored materials be subjected to any vandalism, casualty, loss, or theft prior to their inclusion in the Work.
5. Written confirmation by the Engineer to the Owner that this material(s) or equipment, in the judgment of the Engineer meets the requirements of the Contract Documents, is ready for prompt use; and is properly stored by the Contractor and adequately protected until incorporated into the Work.

40. PROGRESS PAYMENTS

40.1 After the Engineer has issued a Certificate for Payment, the Owner shall make payments to the Contractor in accordance with M.G.L.c.30 39K provided below.

40.1.1 “Chapter 30: Section 39K. Public building construction contracts; payments

Section 39K. Every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, shall contain the following paragraph:— Within fifteen days (30 days in the case of the commonwealth, including local housing authorities)

after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the Engineer to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149."

41. SUB-CONTRACTOR PROGRESS PAYMENTS

41.1 The Contractor shall make payments to Subcontractors in accordance with M.G.L.c.30 39F provided below.

41.1.1 "Chapter 30: Section 39F. Construction contracts; assignment and subrogation; subcontractor defined; enforcement of claim for direct payment; deposit, reduction of disputed amounts

Section 39F. (1) Every contract awarded pursuant to sections forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority

shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction.”

42. WARRANTY

42.1 The Contractor warrants to the Owner and Engineer that all of the materials and equipment furnished under the Contract will be of good quality and new unless otherwise required by the Contract Documents, that all of the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor’s warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Unless otherwise provided, all special guarantees and warranties referred to in the Contract Documents shall commence as of the date of Substantial Completion of the Work, except that warranties on any items or systems completed after Substantial Completion shall commence when such items or systems have been completed. All such guarantees and warranties shall extend for the period of time provided therein. Copies of all such warranties shall be submitted to the Owner prior to final payment. The failure to deliver a required guarantee or warranty shall constitute a failure to fully complete the Work in accordance with the Contract Documents. Delivery by the Contractor shall constitute the Contractor’s guarantee to the Owner that the warranties will be performed in accordance with their terms and conditions. All Subcontractors’ and manufacturers’ warranties required under the Contract Documents shall be deemed to be assigned to the Owner pursuant to this Contract whether or not such warranties are physically delivered to the Owner as required.

42.2 The warranties in this Section shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.

42.3 The Contractor shall be responsible for determining that all materials furnished for the Work meet the requirements of the Contract Documents. The Engineer may require the Contractor to produce reasonable evidence that a material meets such requirements, such as certified reports of tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which the Engineer requests that would lead to a reasonable certainty that the material used, or proposed to be used, for the Work meets the Contract Documents requirements. All such data shall be furnished at the Contractor’s expense.

42.4 Any additional cost, or any loss or damage arising from the substitution of any material or any method for Work originally specified shall be paid by the Contractor, unless such substitution was made at the written request or direction of the Owner or Engineer.

42.5 No additional charge shall be made by the Contractor for attending meetings at the site to diagnose problems or to instruct the Owner’s personnel in the proper operation or maintenance of

the Work, or for making initial or seasonal adjustments (not including normal maintenance) of mechanical systems or other Work during the applicable warranty period. The Contractor shall provide such service promptly upon request from the Owner. In case of emergency, service shall be provided as necessary to avoid loss or damage or to maintain normal use of the premises.

43. GENERAL GUARANTY

43.1 If at any time during the period of one (1) year from the date of Substantial Completion part of the Work, or any material or equipment that is part of the Work, shall, in the reasonable determination of the Engineer or Owner, require replacing or repairing due to the fact that it is broken, defective, or otherwise does not conform to the Contract Documents, the Owner will notify the Contractor to make the required repairs or replacement.

43.2 If the Contractor shall neglect to commence such repairs or replacement to the satisfaction of the Owner within ten (10) days from the date of in hand personal delivery or mailing such notice, then the Owner may employ other persons to make the same.

43.3 The Contractor agrees, upon demand, to pay to the Owner all amounts, which the Owner expends for such repairs or replacements.

43.4 During this one-year guarantee period any corrective work shall be performed in accordance with the applicable terms of this Contract. For items of work completed after use and occupancy has been taken, the one-year guarantee shall commence at the time the Owner accepts such items.

43.5 The one year guarantee shall not limit any express guaranty or warranty provided elsewhere in the Contract Documents, nor does it limit the time which proceedings may be commenced to establish Contractor's liability with respect to the Contractor's obligations of the Contract Documents, nor does it limit the time of the obligations of the Contract Documents of unforeseen conditions or failure to carry out work according to the Contract Documents.

43.6 The Contractor's obligation to correct Work is in addition to, and not in substitution of, such guarantees or warranties as may be required in the various Sections of the Specifications.

44. ENERGY STAR

44.1 The Contractor shall be responsible for achieving and providing Energy Star Certification prior to Substantial Completion approval.

44.2 The Contractor shall prepare, submit, and pay processing fee for all applications for rebates for Energy Star Components, Energy Star Certifications, or non-Energy Star components that are available as part of the Work or any components of the Work for the project.

44.3 The Contractor shall verify that all Rebate refunds are made payable and delivered to the Owner with the appropriate project reference annotated thereof.

45. SUBSTANTIAL COMPLETION

45.1 Substantial completion is the stage in the progress of the Work when the Work or a designated portion of the work is sufficiently complete and in accordance with the Contract Documents so that the Owner can occupy or use the Work for its intended purpose with only minor items which have no material effect on the use, function or value of the Work and which can be corrected or completed without any interference with the Owner's use of the Work remaining to be corrected or completed.

45.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Engineer a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents.

45.3 Upon receipt of the Contractor's list of items to be completed or corrected, the Engineer shall promptly make a thorough inspection and prepare a "punch list", setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or are incomplete.

45.4 If, after receipt of the Contractor's list, the Engineer determines that the Work is not substantially complete, the Engineer shall inform the Contractor of those items that must be completed before the Engineer will prepare a punch list. Upon completion of those items, the Contractor shall again request the Engineer to prepare the punch list.

45.5 When the punch list has been prepared, the Contractor shall arrange a meeting with the Engineer and Subcontractors to identify and explain all punch list items and address questions on the work which must be done before final acceptance.

45.6 The Engineer may revise the punch list, from time to time, to ensure that all items of the Work are properly completed.

45.7 The Contractor shall complete all the remaining items of the Work, as soon as possible, and in any event within one hundred and twenty days after Substantial Completion, unless the Engineer determines that a shorter time period for completion is appropriate, in which event the Contractor must complete the Contract work within such period.

45.8 If the Contractor fails to complete the remaining items of Work within the time period provided the Owner may arrange for other contractors to complete such items and the direct and indirect costs of such completion shall be charged against the balance due the Contractor or, if no such balance remains, the Contractor shall pay the Owner the costs of such completion. Alternatively, the Owner may invoke the performance bond of the Contractor and demand that the surety shall complete the remaining items of work in a timely manner.

45.9 The Engineer will conduct up to three (3) inspections of completed punch list items. The Contractor shall be responsible for the costs of additional inspections required to verify successful completion of the punch list.

45.10 Upon verification of submittals and inspection by the Owner and Engineer that the Work or a portion of the Work the contractor has requested has reached Substantial Completion, the Owner shall authorize the Engineer to prepare a Certificate of Substantial Completion establishing the Date and stating the responsibilities of the Owner and the Contractor for utilities, heat, damage, insurance, maintenance, and security. The Contractor and the Owner shall provide written acceptance of the terms of the Certificate.

46. PARTIAL OCCUPANCY

46.1 The Owner may partially occupy or use a portion of the Work that has not reached Substantial Completion. IN such an event, the Owner and the Contractor shall prepare a written agreement agreeing on the terms of payments for security, maintenance, heat utilities, damage to the Work, insurance, correction of the Work, and warranties. The Engineer shall inspect and document the area, with the Owner and the Contractor that shall be Partially Occupied prior to the Owner's partial occupancy. Partial Occupancy by the Owner shall not constitute acceptance of any Work not complying with the Contract Documents.

46.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Engineer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

46.3 Upon receipt of notice of intent to partially occupy, the Contractor shall promptly secure and submit to the Engineer endorsement from all insurance carriers issuing policies covering the Work permitting use and occupancy of the Work, or any designated portion thereof, by the Owner prior to Substantial Completion of the entire Project.

47. FINAL PAYMENT

47.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Engineer will promptly make such inspection and, when the Engineer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Engineer will promptly issue a final Certificate for Payment stating that to the best of the Engineer's knowledge, information and belief, and on the basis of the Engineer's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Engineer's final Certificate for Payment will constitute a further representation that conditions listed in Section 47.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

47.2 Prior to and as a condition precedent to final payment, all of the following matters shall have been resolved and documents and items shall have been received and approved in writing by the Owner: (1) final documents of similar nature to those required by the Contract Documents in connection with any Application for Payment hereunder; (2) proof of the satisfactory completion of all required inspections and issuance of all final permits, approvals, sign-offs, certificates, affidavits, and authorizations for use and occupancy of the Project required by any authority having jurisdiction, including an unconditional and full permanent certificate of occupancy, (3) formally prepared "as built" Record Drawings, Specifications, records and related data, all in accordance

with the requirements of the Contract Documents, (4) all operating and maintenance manuals and parts lists required by the Contract Documents, (5) all guarantees and warranties to which the Owner is entitled hereunder, (6) satisfactory proof that all claims arising out of the Work and any liens arising out of the same that have been filed or recorded have been released or bonded, (7) acknowledgement of prior payments and final waivers of lien from the Contractor and all Subcontractors and suppliers, (8) the Engineer's certificate certifying that the Work is complete and complies with the Contract Documents, (9) if applicable, a satisfactory report by the Contractor that is approved by the Engineer that all mechanical systems have been approved and are properly balanced, (10) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible have been paid or otherwise satisfied, (11) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (12) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (13) consent of surety, if required, to final payment, and (14) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor shall furnish a bond satisfactory to the Owner to indemnify the Owner against any claim, including any lien that a Subcontractor may assert against the Owner.

47.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Engineer so confirms, the Owner shall, upon application by the Contractor and certification by the Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Engineer prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

47.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

1. liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
2. failure of the Work to comply with the requirements of the Contract Documents;
3. terms of warranties required by the Contract Documents; or
4. faulty or defective work appearing after Final Payment.

47.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

47.6 The Owner may withhold from payment on the final Application for Payment any amount to which it would have been entitled to withhold payment on any other Application for Payment pursuant to Section 38.

48. RECORD KEEPING

48.1 The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

48.2 Until the expiration of six years after final payment, the Inspector General, the Owner, and the Department shall have the right to examine any books, documents, papers or records of the Contractor and Subcontractors that directly pertain to, and involve transactions relating to the Contractor and Subcontractors.

48.3 The Contractor shall describe any change in the method of maintaining records or recording transactions which materially affects any statements filed with the Owner including the date of the change and reasons therefor, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

49. TERMINATION

49.1 The Owner shall, in addition to any other rights or remedies it may have under this Contract or pursuant to any applicable law, have the right to terminate the employment of the Contractor if the Contractor:

1. repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
2. fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between the Contractor and subcontractors;
3. repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of the Owner or any other public authority;
4. is guilty of substantial breach of a provision of the Contract Documents;
5. sublets or assigns all or any portion of the Work, the Contract, or claims thereunder, without the prior written consent of the Owner, except as provided in the Contract;
6. the Engineer and/or the Owner has determined that the rate of progress required on the project is not being met, and that Substantial Completion of the Work shall not occur consistent with the Contract Documents; or

7. the Contractor has violated the Contract Documents by providing sub-standard workmanship in the opinion of the Engineer and/or the Owner.

49.2 If the right of the Contractor to proceed is so terminated, the Owner may, without prejudice to any other rights or remedies of the Owner, and after giving the Contractor and the Contractor's surety, five (5) business days' written notice, terminate the Contract and the employment of the Contractor and may, subject to any prior rights of the surety, take any one or more of the following actions:

1. take possession of and utilize in completing the Work such materials, appliances, supplies, plant and equipment as may be on the site of the Work, and necessary therefore. The Owner shall not be liable for any depreciation, loss or damage to said materials, machinery, implements or tools during said use and the Contractor shall be solely responsible for their removal from the Project site after the Owner has no further use for them;
2. exclude the Contractor from the site of the Work;
3. accept assignment of subcontracts in accordance with Section 9.3 of this Contract;
4. finish the Work by whatever reasonable method the Owner may deem expedient through the Owner's forces or the hiring of other contractors; or
5. require the surety or sureties to complete the Contract.

49.3 Upon termination of the Contract by the Owner, no further payments shall be due the Contractor until the Work is completed. If the unpaid balance of the Contract Sum shall exceed the cost of completing the Work, including all overhead costs, the excess shall be paid to the Contractor. If the cost of completing the Work shall exceed the unpaid balance, the Contractor or the Contractor's sureties shall pay the difference to the Owner. The cost incurred by the Owner, as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Owner at the Contractor's request. This obligation for payment shall survive termination of the Contract.

49.4 All expenses charged under termination shall be deducted and paid by the Owner out of any monies then due or to become due the Contractor under this Contract; and in such accounting the Owner shall not be held to obtain the lowest figures, by competitive bid or otherwise, for the completion of the Work or any part thereof.

49.5 Expenses incurred in termination shall also include, but not be limited to, costs for engineering extra services, additional Clerk of the Work services, and Owner's representative services required, in the opinion of the Owner, to successfully inspect and administer the construction contract through final completion.

49.6 In addition to the termination rights provided in Sections 49.1-75.5 above, the Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

1. cease operations as directed by the Owner in the notice;
2. take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
3. except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment in an amount equal to direct, out-of-pocket costs incurred by the Contractor (including costs incurred in the cancellation of subcontracts). The Contractor shall include in all subcontracts provisions allowing for the termination of such subcontracts for convenience without penalty or unearned profit.

50. PROTECTION OF LIVES AND HEALTH

50.1 The Contractor shall comply with all applicable laws both the Commonwealth of Massachusetts and Federal laws, ordinances, rules, regulations, and lawful orders of public authorities regarding safety of persons or property or protection from damage, injury or loss, and provide all safety training, and verification of license requirements for all Subcontractors and employees of the Contractor. The Contractor shall bear the cost of all loss and shall reimburse the Owner for all costs incurred regarding any loss.

50.2 In order to protect the lives and health of employees under the Contract, the Contractor and Subcontractors shall comply with all pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of the work and for any damage which may result from their failure or their improper construction, maintenance, or operation.

50.3 The Contractor shall designate the Superintendent, or a member of the Contractor's organization to prevent accidents and provide written notice to the Owner of the person so designated as the Safety Officer.

50.4 The Contractor shall provide and submit to the Owner, Certification under pains and penalties of perjury that the Contractor is able to furnish labor in harmony with all other elements of labor employed in the Work and that all employees employed on the work site have successfully completed at least ten (10) hours of United States Occupational Safety and Health Administration (OSHA) approved training.

50.5 The Owner shall have the authority to clean up or correct any situation which presents a hazard or unsafe condition or affects the Owner's use of the facility, without any notice requirements to the Contractor. The cost of the Owner's correction of any unsafe condition caused by an act or omission of the Contractor or Subcontractor shall be deducted from the Contract Sum and withheld from any payments otherwise due to the Contractor, at the sole election of the Owner.

51. QUALIFICATIONS FOR EMPLOYMENT

51.1 No persons under the age of sixteen years shall be employed on the project under this Contract. No persons whose age or physical condition is such as to make that persons employment dangerous to their health or safety or to the health or safety of others shall be employed on the project under this Contract; provided, that this shall not operate against the employment of physically handicapped persons, otherwise employable, where such persons may be safely assigned to work which they can ably perform. No person currently serving sentence in a Penal or Correctional Institution and no inmate of an Institution for mental defectives shall be employed in the project under this Contract.

52. MEMBERS OF LOCAL GOVERNING BODY, OR OTHER PUBLIC OFFICIALS

52.1 The Contractor shall incorporate or cause to be incorporated, in all of its agreements, contracts or subcontracts a provision prohibiting such interest pursuant to the purposes of this section.

52.2 No member, officer or employee of the Owner, or its designees or agents, no member of the governing body of the locality in which the project is situated, and no other public officials, member, officer or employee of the City of Brockton, or its designees or agents, no members of the governing body of such locality or localities who exercises any functions or responsibilities with respect to the project during their tenure or for one year thereafter, shall have any interest, direct or indirect, in any agreement, contract or subcontract, or the proceeds thereof, for work to be performed in connection with the project assisted under this Contract.

53. COMPLIANCE WITH LOCAL, STATE AND FEDERAL LAWS

53.1 The Contract shall be governed by the law of the Commonwealth of Massachusetts without respect to its choice of law rules.

53.2 The Contractor's Work hereunder shall be subject to all applicable Federal, State, and local laws, codes, and regulations, and order of court or administrative agencies. The Contractor shall comply, and shall require any subcontractor to comply, with the below cited Local, State, and Federal Laws, and shall incorporate these laws in any written agreement between the Contractor and a subcontractor. Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, whether expressly stated or not.

53.3 If the Contractor is a foreign corporation, it shall comply with M.G.L. c. 156D, and M.G.L. c.30, § 39L.

53.4 During the performance of his contract, the Contractor and all of (his) Subcontractors (hereinafter collectively referred to as the Contractor), for himself, his assignees, and successors in interest, agree as follows:

1. In connection with the performance of Work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, sex, sexual orientation, genetic

information, ancestry, handicap, or any other basis prohibited by law. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising; recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship.

2. The Contractor, in the performance of all Work after award will not discriminate on grounds of race, color, religious creed, national origin, age, sex, sexual orientation, genetic information, ancestry or handicap, or any other basis prohibited by law, in employment practices, in the selection or retention of Subcontractors, or in the procurement of materials and rentals of equipment.

54. CONTRACTOR'S ACCOUNTING METHODS REQUIREMENTS

54.1 The words defined herein shall have the meaning stated below whenever they appear in this Article 54:

1. "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a Contract as defined in Subsection 54.1.2.
2. "Contract" means any contract awarded or executed pursuant to M.G.L. c.7, §38A1/2 - 380, inclusive, and any contract awarded or executed pursuant to M.G.L. c. 25A, §11C, M.G.L. c. 30, §39M, or M.G.L. c.149, §44A-44H, inclusive, which is for an amount or estimated amount that exceeds the dollar amount set forth in M.G.L. c.30, §39R.
3. "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.
4. "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public account under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the Owner.
5. "Audit," when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a CERTIFIED opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

6. “Accountant’s Report,” when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets forth his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefore shall be stated. An accountant’s report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the Contractor.
7. “Management,” when used herein, means the chief executive officers, partners, principals, or other person or persons primarily responsible for the financial and operational policies and practices of the Contractor.
8. Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

54.2 The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

54.3 Until the expiration of six years after final payment, the Owner, office of Inspector General, and the Deputy Commissioner of the Division of Capital Asset Management and Maintenance shall have the right to examine any books, documents, papers or records of the Contractor or of his Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or his/her Subcontractors.

54.4 If the agreement is a contract as defined herein, the Contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the Owner, including in his description the date of the change and reasons therefore, and shall accompany said description with a letter from the Contractor’s independent certified public accountant approving or otherwise commenting on the changes.

54.5 If the agreement is a contract as defined herein, the Contractor has filed a statement of management on internal accounting controls as set forth in Section 54.7 below prior to the execution of the contract.

54.6 If the agreement is a contract as defined herein, the Contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in Section 54.9 below.

54.7 Every Contractor awarded a contract shall file with the Owner a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

1. transactions are executed in accordance with management's general and specific authorization;
2. transactions are recorded as necessary:
 - i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and
 - ii. to maintain accountability for assets;
3. access to assets is permitted only in accordance with management's general or specific authorization; and
4. the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

54.8 Every Contractor awarded a contract shall also file with the Owner a statement prepared and signed by an independent certified public accountant, stating that he has examined the statement of management on internal accounting controls, and expressing an opinion as to

1. whether the representations of management in response to this Section and Section 54.3 above are consistent with the result of management's evaluation of the system of internal accounting controls; and
2. whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

54.9 The Contractor shall annually file with the Division of Capital Asset Management and Maintenance during the term of the Contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant and a provide a copy of said statement to the Owner. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report.

IN WITNESS THEREOF, the Contractor and the Owner have affixed their signatures on the dates written below.

APPROVED BY THE CITY OF BROCKTON:

Date: _____

Robert F. Sullivan, Mayor

APPROVED AS TO APPROPRIATION:

Date: _____

City Solicitor

SIGNED:

[Contractor]

Date: _____

[Name]

[Title]

Prevailing Wage Rates



CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H

ROSALIN ACOSTA
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority: City of Brockton
Contract Number: **City/Town:** BROCKTON
Description of Work: New Street Roadway Construction & Petronelli Way Improvements - Roadway construction including full depth pavement, granite curb, and cement concrete sidewalks.
Job Location: Petronelli Way

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2021	\$35.95	\$12.91	\$14.82	\$0.00	\$63.68
	08/01/2021	\$35.95	\$13.41	\$14.82	\$0.00	\$64.18
	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2021	\$36.02	\$12.91	\$14.82	\$0.00	\$63.75
	08/01/2021	\$36.02	\$13.41	\$14.82	\$0.00	\$64.25
	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2021	\$36.14	\$12.91	\$14.82	\$0.00	\$63.87
	08/01/2021	\$36.14	\$13.41	\$14.82	\$0.00	\$64.37
	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.56	\$8.60	\$16.64	\$0.00	\$62.80
	12/01/2022	\$38.41	\$8.60	\$16.64	\$0.00	\$63.65
	06/01/2023	\$39.31	\$8.60	\$16.64	\$0.00	\$64.55
	12/01/2023	\$40.21	\$8.60	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
LABORERS - ZONE 2	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.56	\$8.60	\$16.64	\$0.00	\$62.80
	12/01/2022	\$38.41	\$8.60	\$16.64	\$0.00	\$63.65
	06/01/2023	\$39.31	\$8.60	\$16.64	\$0.00	\$64.55
	12/01/2023	\$40.21	\$8.60	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15
BOILERMAKERS LOCAL 29						

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
2	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
3	70	\$32.27	\$7.07	\$12.59	\$0.00	\$51.93
4	75	\$34.58	\$7.07	\$13.49	\$0.00	\$55.14
5	80	\$36.88	\$7.07	\$14.38	\$0.00	\$58.33
6	85	\$39.19	\$7.07	\$15.29	\$0.00	\$61.55
7	90	\$41.49	\$7.07	\$16.18	\$0.00	\$64.74
8	95	\$43.80	\$7.07	\$17.09	\$0.00	\$67.96

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	02/01/2021	\$55.75	\$11.39	\$22.09	\$0.00	\$89.23
BRICKLAYERS LOCAL 3 (QUINCY)	08/01/2021	\$57.15	\$11.39	\$22.25	\$0.00	\$90.79
	02/01/2022	\$57.74	\$11.39	\$22.25	\$0.00	\$91.38

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Quincy

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.88	\$11.39	\$22.09	\$0.00	\$61.36
2	60	\$33.45	\$11.39	\$22.09	\$0.00	\$66.93
3	70	\$39.03	\$11.39	\$22.09	\$0.00	\$72.51
4	80	\$44.60	\$11.39	\$22.09	\$0.00	\$78.08
5	90	\$50.18	\$11.39	\$22.09	\$0.00	\$83.66

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.58	\$11.39	\$22.25	\$0.00	\$62.22
2	60	\$34.29	\$11.39	\$22.25	\$0.00	\$67.93
3	70	\$40.01	\$11.39	\$22.25	\$0.00	\$73.65
4	80	\$45.72	\$11.39	\$22.25	\$0.00	\$79.36
5	90	\$51.44	\$11.39	\$22.25	\$0.00	\$85.08

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$41.82	\$8.60	\$17.72	\$0.00	\$68.14
	12/01/2021	\$42.83	\$8.60	\$17.72	\$0.00	\$69.15
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.67	\$8.60	\$17.72	\$0.00	\$66.99
	12/01/2021	\$41.68	\$8.60	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.67	\$8.60	\$17.72	\$0.00	\$66.99
	12/01/2021	\$41.68	\$8.60	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2021	\$43.54	\$9.40	\$18.95	\$0.00	\$71.89
	09/01/2021	\$44.19	\$9.40	\$18.95	\$0.00	\$72.54
	03/01/2022	\$44.79	\$9.40	\$18.95	\$0.00	\$73.14
	09/01/2022	\$45.44	\$9.40	\$18.95	\$0.00	\$73.79
	03/01/2023	\$46.04	\$9.40	\$18.95	\$0.00	\$74.39

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.77	\$9.40	\$1.73	\$0.00	\$32.90
2	60	\$26.12	\$9.40	\$1.73	\$0.00	\$37.25
3	70	\$30.48	\$9.40	\$13.76	\$0.00	\$53.64
4	75	\$32.66	\$9.40	\$13.76	\$0.00	\$55.82
5	80	\$34.83	\$9.40	\$15.49	\$0.00	\$59.72
6	80	\$34.83	\$9.40	\$15.49	\$0.00	\$59.72
7	90	\$39.19	\$9.40	\$17.22	\$0.00	\$65.81
8	90	\$39.19	\$9.40	\$17.22	\$0.00	\$65.81

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.10	\$9.40	\$1.73	\$0.00	\$33.23
2	60	\$26.51	\$9.40	\$1.73	\$0.00	\$37.64
3	70	\$30.93	\$9.40	\$13.76	\$0.00	\$54.09
4	75	\$33.14	\$9.40	\$13.76	\$0.00	\$56.30
5	80	\$35.35	\$9.40	\$15.49	\$0.00	\$60.24
6	80	\$35.35	\$9.40	\$15.49	\$0.00	\$60.24
7	90	\$39.77	\$9.40	\$17.22	\$0.00	\$66.39
8	90	\$39.77	\$9.40	\$17.22	\$0.00	\$66.39

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$30.72/ 3&4 \$36.75/ 5&6 \$55.37/ 7&8 \$61.45

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	04/01/2021	\$23.16	\$7.21	\$4.80	\$0.00	\$35.17
CARPENTERS-ZONE 3 (Wood Frame)	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17

All Aspects of New Wood Frame Work

Apprentice - CARPENTER (Wood Frame) - Zone 3**Effective Date - 04/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
2	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
3	65	\$15.05	\$7.21	\$0.00	\$0.00	\$22.26
4	70	\$16.21	\$7.21	\$0.00	\$0.00	\$23.42
5	75	\$17.37	\$7.21	\$3.80	\$0.00	\$28.38
6	80	\$18.53	\$7.21	\$3.80	\$0.00	\$29.54
7	85	\$19.69	\$7.21	\$3.80	\$0.00	\$30.70
8	90	\$20.84	\$7.21	\$3.80	\$0.00	\$31.85

Effective Date - 04/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
2	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
3	65	\$15.38	\$7.21	\$0.00	\$0.00	\$22.59
4	70	\$16.56	\$7.21	\$0.00	\$0.00	\$23.77
5	75	\$17.75	\$7.21	\$3.80	\$0.00	\$28.76
6	80	\$18.93	\$7.21	\$3.80	\$0.00	\$29.94
7	85	\$20.11	\$7.21	\$3.80	\$0.00	\$31.12
8	90	\$21.29	\$7.21	\$3.80	\$0.00	\$32.30

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$17.63/ 3&4 \$19.95/ 5&6 \$27.22/ 7&8 \$29.54

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING

01/01/2020

\$49.07

\$12.75

\$22.41

\$0.62

\$84.85

BRICKLAYERS LOCAL 3 (QUINCY)

Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Quincy)**Effective Date - 01/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$12.75	\$15.41	\$0.00	\$52.70
2	60	\$29.44	\$12.75	\$17.41	\$0.62	\$60.22
3	65	\$31.90	\$12.75	\$18.41	\$0.62	\$63.68
4	70	\$34.35	\$12.75	\$19.41	\$0.62	\$67.13
5	75	\$36.80	\$12.75	\$20.41	\$0.62	\$70.58
6	80	\$39.26	\$12.75	\$21.41	\$0.62	\$74.04
7	90	\$44.16	\$12.75	\$22.41	\$0.62	\$79.94

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$51.73	\$13.75	\$15.80	\$0.00	\$81.28
	12/01/2021	\$52.88	\$13.75	\$15.80	\$0.00	\$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$33.40	\$13.75	\$15.80	\$0.00	\$62.95
	12/01/2021	\$34.19	\$13.75	\$15.80	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2021	\$52.06	\$8.25	\$22.75	\$0.00	\$83.06

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN <i>LABORERS - ZONE 2</i>	06/01/2021	\$40.82	\$8.60	\$17.57	\$0.00	\$66.99
	12/01/2021	\$41.83	\$8.60	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	12/01/2023	\$46.08	\$8.60	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.82	\$8.60	\$17.57	\$0.00	\$67.99
	12/01/2021	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.83	\$8.60	\$17.57	\$0.00	\$72.00
	12/01/2023	\$47.08	\$8.60	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BURNERS <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.57	\$8.60	\$17.57	\$0.00	\$67.74
	12/01/2021	\$42.58	\$8.60	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.58	\$8.60	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.58	\$8.60	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.58	\$8.60	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.83	\$8.60	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.82	\$8.60	\$17.57	\$0.00	\$67.99
	12/01/2021	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.83	\$8.60	\$17.57	\$0.00	\$72.00
	12/01/2023	\$47.08	\$8.60	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$41.57	\$8.60	\$17.57	\$0.00	\$67.74
	12/01/2021	\$42.58	\$8.60	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.58	\$8.60	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.58	\$8.60	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.58	\$8.60	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.83	\$8.60	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	06/01/2021	\$40.82	\$8.60	\$17.57	\$0.00	\$66.99
	12/01/2021	\$41.83	\$8.60	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.83	\$8.60	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.83	\$8.60	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.83	\$8.60	\$17.57	\$0.00	\$71.00
	12/01/2023	\$46.08	\$8.60	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22

Apprentice - ELECTRICIAN - Local 223**Effective Date - 09/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.46	\$10.90	\$0.52	\$0.00	\$28.88
2	45	\$19.65	\$10.90	\$0.59	\$0.00	\$31.14
3	50	\$21.83	\$10.90	\$0.65	\$0.00	\$33.38
4	55	\$24.01	\$10.90	\$6.28	\$0.00	\$41.19
5	60	\$26.20	\$10.90	\$6.77	\$0.00	\$43.87
6	65	\$28.38	\$10.90	\$7.24	\$0.00	\$46.52
7	70	\$30.56	\$10.90	\$7.73	\$0.00	\$49.19
8	75	\$32.75	\$10.90	\$8.21	\$0.00	\$51.86

Notes:**Apprentice to Journeyworker Ratio:2:3*****ELEVATOR CONSTRUCTOR
ELEVATOR CONSTRUCTORS LOCAL 4

01/01/2021

\$63.47

\$15.88

\$19.31

\$0.00

\$98.66

01/01/2022

\$65.62

\$16.03

\$20.21

\$0.00

\$101.86

Apprentice - ELEVATOR CONSTRUCTOR - Local 4**Effective Date - 01/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.74	\$15.88	\$0.00	\$0.00	\$47.62
2	55	\$34.91	\$15.88	\$19.31	\$0.00	\$70.10
3	65	\$41.26	\$15.88	\$19.31	\$0.00	\$76.45
4	70	\$44.43	\$15.88	\$19.31	\$0.00	\$79.62
5	80	\$50.78	\$15.88	\$19.31	\$0.00	\$85.97

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74

Notes:

Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1ELEVATOR CONSTRUCTOR HELPER
ELEVATOR CONSTRUCTORS LOCAL 4

01/01/2021

\$44.43

\$15.88

\$19.31

\$0.00

\$79.62

01/01/2022

\$45.93

\$16.03

\$20.21

\$0.00

\$82.17

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2021	\$45.88	\$13.50	\$15.70	\$0.00	\$75.08
	11/01/2021	\$46.88	\$13.50	\$15.70	\$0.00	\$76.08
	05/01/2022	\$48.03	\$13.50	\$15.70	\$0.00	\$77.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2021	\$47.40	\$13.50	\$15.70	\$0.00	\$76.60
	11/01/2021	\$48.41	\$13.50	\$15.70	\$0.00	\$77.61
	05/01/2022	\$49.57	\$13.50	\$15.70	\$0.00	\$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2021	\$22.91	\$13.50	\$15.70	\$0.00	\$52.11
	11/01/2021	\$23.51	\$13.50	\$15.70	\$0.00	\$52.71
	05/01/2022	\$24.18	\$13.50	\$15.70	\$0.00	\$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>/ COMMISSIONINGELECTRICIANS LOCAL 223</i>	09/01/2020	\$36.86	\$10.90	\$12.45	\$0.00	\$60.21
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$41.31	\$13.75	\$15.80	\$0.00	\$70.86
	12/01/2021	\$42.26	\$13.75	\$15.80	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
	12/01/2021	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE I</i>	03/01/2021	\$48.59	\$9.40	\$19.25	\$0.00	\$77.24
	09/01/2021	\$49.39	\$9.40	\$19.25	\$0.00	\$78.04
	03/01/2022	\$50.19	\$9.40	\$19.25	\$0.00	\$78.84

Apprentice - FLOORCOVERER - Local 2168 Zone I**Effective Date - 03/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.30	\$9.40	\$1.79	\$0.00	\$35.49
2	55	\$26.72	\$9.40	\$1.79	\$0.00	\$37.91
3	60	\$29.15	\$9.40	\$13.88	\$0.00	\$52.43
4	65	\$31.58	\$9.40	\$13.88	\$0.00	\$54.86
5	70	\$34.01	\$9.40	\$15.67	\$0.00	\$59.08
6	75	\$36.44	\$9.40	\$15.67	\$0.00	\$61.51
7	80	\$38.87	\$9.40	\$17.46	\$0.00	\$65.73
8	85	\$41.30	\$9.40	\$17.46	\$0.00	\$68.16

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.70	\$9.40	\$1.79	\$0.00	\$35.89
2	55	\$27.16	\$9.40	\$1.79	\$0.00	\$38.35
3	60	\$29.63	\$9.40	\$13.88	\$0.00	\$52.91
4	65	\$32.10	\$9.40	\$13.88	\$0.00	\$55.38
5	70	\$34.57	\$9.40	\$15.67	\$0.00	\$59.64
6	75	\$37.04	\$9.40	\$15.67	\$0.00	\$62.11
7	80	\$39.51	\$9.40	\$17.46	\$0.00	\$66.37
8	85	\$41.98	\$9.40	\$17.46	\$0.00	\$68.84

Notes: Steps are 750 hrs.

% After 09/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)

Step 1&2 \$33.03/ 3&4 \$39.64/ 5&6 \$59.08/ 7&8 \$65.73

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER

OPERATING ENGINEERS LOCAL 4

06/01/2021

\$50.73

\$13.75

\$15.80

\$0.00

\$80.28

12/01/2021

\$51.88

\$13.75

\$15.80

\$0.00

\$81.43

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS

OPERATING ENGINEERS LOCAL 4

06/01/2021

\$33.40

\$13.75

\$15.80

\$0.00

\$62.95

12/01/2021

\$34.19

\$13.75

\$15.80

\$0.00

\$63.74

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR
SYSTEMS)

GLAZIERS LOCAL 35 (ZONE 2)

01/01/2021

\$41.56

\$8.25

\$22.75

\$0.00

\$72.56

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.78	\$8.25	\$0.00	\$0.00	\$29.03
2	55	\$22.86	\$8.25	\$6.16	\$0.00	\$37.27
3	60	\$24.94	\$8.25	\$6.72	\$0.00	\$39.91
4	65	\$27.01	\$8.25	\$7.28	\$0.00	\$42.54
5	70	\$29.09	\$8.25	\$19.39	\$0.00	\$56.73
6	75	\$31.17	\$8.25	\$19.95	\$0.00	\$59.37
7	80	\$33.25	\$8.25	\$20.51	\$0.00	\$62.01
8	90	\$37.40	\$8.25	\$21.63	\$0.00	\$67.28

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 06/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$27.90	\$13.75	\$0.00	\$0.00	\$41.65
2	60	\$30.44	\$13.75	\$15.80	\$0.00	\$59.99
3	65	\$32.97	\$13.75	\$15.80	\$0.00	\$62.52
4	70	\$35.51	\$13.75	\$15.80	\$0.00	\$65.06
5	75	\$38.05	\$13.75	\$15.80	\$0.00	\$67.60
6	80	\$40.58	\$13.75	\$15.80	\$0.00	\$70.13
7	85	\$43.12	\$13.75	\$15.80	\$0.00	\$72.67
8	90	\$45.66	\$13.75	\$15.80	\$0.00	\$75.21

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$28.53	\$13.75	\$0.00	\$0.00	\$42.28
2	60	\$31.13	\$13.75	\$15.80	\$0.00	\$60.68
3	65	\$33.72	\$13.75	\$15.80	\$0.00	\$63.27
4	70	\$36.32	\$13.75	\$15.80	\$0.00	\$65.87
5	75	\$38.91	\$13.75	\$15.80	\$0.00	\$68.46
6	80	\$41.50	\$13.75	\$15.80	\$0.00	\$71.05
7	85	\$44.10	\$13.75	\$15.80	\$0.00	\$73.65
8	90	\$46.69	\$13.75	\$15.80	\$0.00	\$76.24

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK)	02/01/2021	\$51.67	\$13.65	\$24.57	\$2.70	\$92.59
SHEETMETAL WORKERS LOCAL 17 - A	08/01/2021	\$53.42	\$13.65	\$24.57	\$2.75	\$94.39
	02/01/2022	\$55.17	\$13.65	\$24.57	\$2.80	\$96.19
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS)	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
ELECTRICIANS LOCAL 223						
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR)	02/01/2021	\$51.67	\$13.65	\$24.57	\$2.70	\$92.59
SHEETMETAL WORKERS LOCAL 17 - A	08/01/2021	\$53.42	\$13.65	\$24.57	\$2.75	\$94.39
	02/01/2022	\$55.17	\$13.65	\$24.57	\$2.80	\$96.19
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER)	08/31/2020	\$44.69	\$10.15	\$19.80	\$0.00	\$74.64
PLUMBERS & PIPEFITTERS LOCAL 51	08/30/2021	\$46.69	\$10.15	\$19.80	\$0.00	\$76.64
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC	08/31/2020	\$44.69	\$10.15	\$19.80	\$0.00	\$74.64
PLUMBERS & PIPEFITTERS LOCAL 51	08/30/2021	\$46.69	\$10.15	\$19.80	\$0.00	\$76.64
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.56	\$8.60	\$16.64	\$0.00	\$62.80
	12/01/2022	\$38.41	\$8.60	\$16.64	\$0.00	\$63.65
	06/01/2023	\$39.31	\$8.60	\$16.64	\$0.00	\$64.55
	12/01/2023	\$40.21	\$8.60	\$16.64	\$0.00	\$65.45

For apprentice rates see "Apprentice- LABORER"

HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.75	\$8.60	\$16.64	\$0.00	\$60.99
	12/01/2021	\$36.66	\$8.60	\$16.64	\$0.00	\$61.90

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2020	\$49.00	\$13.80	\$17.14	\$0.00	\$79.94
	09/01/2021	\$51.40	\$13.80	\$17.14	\$0.00	\$82.34
	09/01/2022	\$53.85	\$13.80	\$17.14	\$0.00	\$84.79

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston

Effective Date - 09/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.50	\$13.80	\$12.42	\$0.00	\$50.72
2	60	\$29.40	\$13.80	\$13.36	\$0.00	\$56.56
3	70	\$34.30	\$13.80	\$14.31	\$0.00	\$62.41
4	80	\$39.20	\$13.80	\$15.25	\$0.00	\$68.25

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.70	\$13.80	\$12.42	\$0.00	\$51.92
2	60	\$30.84	\$13.80	\$13.36	\$0.00	\$58.00
3	70	\$35.98	\$13.80	\$14.31	\$0.00	\$64.09
4	80	\$41.12	\$13.80	\$15.25	\$0.00	\$70.17

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (BOSTON AREA)</i>	09/16/2020	\$48.66	\$8.10	\$25.10	\$0.00	\$81.86
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Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 09/16/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.20	\$8.10	\$25.10	\$0.00	\$62.40
2	70	\$34.06	\$8.10	\$25.10	\$0.00	\$67.26
3	75	\$36.50	\$8.10	\$25.10	\$0.00	\$69.70
4	80	\$38.93	\$8.10	\$25.10	\$0.00	\$72.13
5	85	\$41.36	\$8.10	\$25.10	\$0.00	\$74.56
6	90	\$43.79	\$8.10	\$25.10	\$0.00	\$76.99

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
LABORERS - ZONE 2	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

LABORER	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
LABORERS - ZONE 2	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - *LABORER - Zone 2*

Effective Date - 06/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.00	\$8.60	\$16.64	\$0.00	\$46.24
2	70	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
3	80	\$28.00	\$8.60	\$16.64	\$0.00	\$53.24
4	90	\$31.50	\$8.60	\$16.64	\$0.00	\$56.74

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.55	\$8.60	\$16.64	\$0.00	\$46.79
2	70	\$25.14	\$8.60	\$16.64	\$0.00	\$50.38
3	80	\$28.73	\$8.60	\$16.64	\$0.00	\$53.97
4	90	\$32.32	\$8.60	\$16.64	\$0.00	\$57.56

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15

Apprentice - *LABORER (Heavy & Highway) - Zone 2*

Effective Date - 06/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.00	\$8.60	\$16.64	\$0.00	\$46.24
2	70	\$24.50	\$8.60	\$16.64	\$0.00	\$49.74
3	80	\$28.00	\$8.60	\$16.64	\$0.00	\$53.24
4	90	\$31.50	\$8.60	\$16.64	\$0.00	\$56.74

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.55	\$8.60	\$16.64	\$0.00	\$46.79
2	70	\$25.14	\$8.60	\$16.64	\$0.00	\$50.38
3	80	\$28.73	\$8.60	\$16.64	\$0.00	\$53.97
4	90	\$32.32	\$8.60	\$16.64	\$0.00	\$57.56

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
	For apprentice rates see "Apprentice- LABORER"					
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
	For apprentice rates see "Apprentice- LABORER"					
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.09	\$8.60	\$16.70	\$0.00	\$60.39
	12/01/2021	\$36.00	\$8.60	\$16.70	\$0.00	\$61.30
	06/01/2022	\$36.90	\$8.60	\$16.70	\$0.00	\$62.20
	12/01/2022	\$37.75	\$8.60	\$16.70	\$0.00	\$63.05
	06/01/2023	\$38.65	\$8.60	\$16.70	\$0.00	\$63.95
	12/01/2023	\$39.55	\$8.60	\$16.70	\$0.00	\$64.85
	For apprentice rates see "Apprentice- LABORER"					
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
	For apprentice rates see "Apprentice- LABORER"					
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"					
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
	For apprentice rates see "Apprentice- LABORER"					
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.81	\$8.60	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.66	\$8.60	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.56	\$8.60	\$16.64	\$0.00	\$63.80
	12/01/2023	\$39.46	\$8.60	\$16.64	\$0.00	\$64.70
	This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"					

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LASER BEAM OPERATOR	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
LABORERS - ZONE 2	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR (HEAVY & HIGHWAY)	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

MARBLE & TILE FINISHERS	02/01/2021	\$42.57	\$11.39	\$20.14	\$0.00	\$74.10
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2021	\$43.69	\$11.39	\$20.30	\$0.00	\$75.38
	02/01/2022	\$44.16	\$11.39	\$20.30	\$0.00	\$75.85

Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.29	\$11.39	\$20.14	\$0.00	\$52.82
2	60	\$25.54	\$11.39	\$20.14	\$0.00	\$57.07
3	70	\$29.80	\$11.39	\$20.14	\$0.00	\$61.33
4	80	\$34.06	\$11.39	\$20.14	\$0.00	\$65.59
5	90	\$38.31	\$11.39	\$20.14	\$0.00	\$69.84

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.85	\$11.39	\$20.30	\$0.00	\$53.54
2	60	\$26.21	\$11.39	\$20.30	\$0.00	\$57.90
3	70	\$30.58	\$11.39	\$20.30	\$0.00	\$62.27
4	80	\$34.95	\$11.39	\$20.30	\$0.00	\$66.64
5	90	\$39.32	\$11.39	\$20.30	\$0.00	\$71.01

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	02/01/2021	\$55.77	\$11.39	\$22.08	\$0.00	\$89.24
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2021	\$57.17	\$11.39	\$22.24	\$0.00	\$90.80
	02/01/2022	\$57.74	\$11.39	\$22.24	\$0.00	\$91.37

Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.89	\$11.39	\$22.08	\$0.00	\$61.36
2	60	\$33.46	\$11.39	\$22.08	\$0.00	\$66.93
3	70	\$39.04	\$11.39	\$22.08	\$0.00	\$72.51
4	80	\$44.62	\$11.39	\$22.08	\$0.00	\$78.09
5	90	\$50.19	\$11.39	\$22.08	\$0.00	\$83.66

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.59	\$11.39	\$22.24	\$0.00	\$62.22
2	60	\$34.30	\$11.39	\$22.24	\$0.00	\$67.93
3	70	\$40.02	\$11.39	\$22.24	\$0.00	\$73.65
4	80	\$45.74	\$11.39	\$22.24	\$0.00	\$79.37
5	90	\$51.45	\$11.39	\$22.24	\$0.00	\$85.08

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES)	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2)	01/04/2021	\$39.72	\$9.40	\$20.45	\$0.00	\$69.57
MILLWRIGHTS LOCAL 1121 - Zone 2	01/03/2022	\$40.97	\$9.40	\$20.45	\$0.00	\$70.82
	01/02/2023	\$42.22	\$9.40	\$20.45	\$0.00	\$72.07

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - <i>MILLWRIGHT - Local 1121 Zone 2</i>						
Effective Date - 01/04/2021						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$21.85	\$9.40	\$5.58	\$0.00	\$36.83
2	65	\$25.82	\$9.40	\$16.90	\$0.00	\$52.12
3	75	\$29.79	\$9.40	\$17.92	\$0.00	\$57.11
4	85	\$33.76	\$9.40	\$18.93	\$0.00	\$62.09
Effective Date - 01/03/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.53	\$9.40	\$5.58	\$0.00	\$37.51
2	65	\$26.63	\$9.40	\$16.90	\$0.00	\$52.93
3	75	\$30.73	\$9.40	\$17.92	\$0.00	\$58.05
4	85	\$34.82	\$9.40	\$18.93	\$0.00	\$63.15
<div>Notes: Step 1&2 Appr. indentured after 1/1/2020 receive no pension, but do receive annuity. (Step 1 \$5.58, Step 2 \$6.50) Steps are 2,000 hours</div>						
Apprentice to Journeyworker Ratio:1:5						
MORTAR MIXER	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
<i>LABORERS - ZONE 2</i>	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	06/01/2021	\$23.40	\$13.75	\$15.80	\$0.00	\$52.95
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$23.98	\$13.75	\$15.80	\$0.00	\$53.53
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS)	06/01/2021	\$28.26	\$13.75	\$15.80	\$0.00	\$57.81
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$28.94	\$13.75	\$15.80	\$0.00	\$58.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS)	01/01/2021	\$52.06	\$8.25	\$22.75	\$0.00	\$83.06
<i>PAINTERS LOCAL 35 - ZONE 2</i>						

Apprentice - PAINTER Local 35 - BRIDGES/TANKS**Effective Date -** 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *

01/01/2021

\$42.96

\$8.25

\$22.75

\$0.00

\$73.96

* If 30% or more of surfaces to be painted are new construction,

NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New**Effective Date -** 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.48	\$8.25	\$0.00	\$0.00	\$29.73
2	55	\$23.63	\$8.25	\$6.16	\$0.00	\$38.04
3	60	\$25.78	\$8.25	\$6.72	\$0.00	\$40.75
4	65	\$27.92	\$8.25	\$7.28	\$0.00	\$43.45
5	70	\$30.07	\$8.25	\$19.39	\$0.00	\$57.71
6	75	\$32.22	\$8.25	\$19.95	\$0.00	\$60.42
7	80	\$34.37	\$8.25	\$20.51	\$0.00	\$63.13
8	90	\$38.66	\$8.25	\$21.63	\$0.00	\$68.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)

01/01/2021

\$41.02

\$8.25

\$22.75

\$0.00

\$72.02

PAINTERS LOCAL 35 - ZONE 2

Classification

Effective Date

Base Wage

Health

Pension

Supplemental
Unemployment

Total Rate

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**Effective Date -** 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.51	\$8.25	\$0.00	\$0.00	\$28.76
2	55	\$22.56	\$8.25	\$6.16	\$0.00	\$36.97
3	60	\$24.61	\$8.25	\$6.72	\$0.00	\$39.58
4	65	\$26.66	\$8.25	\$7.28	\$0.00	\$42.19
5	70	\$28.71	\$8.25	\$19.39	\$0.00	\$56.35
6	75	\$30.77	\$8.25	\$19.95	\$0.00	\$58.97
7	80	\$32.82	\$8.25	\$20.51	\$0.00	\$61.58
8	90	\$36.92	\$8.25	\$21.63	\$0.00	\$66.80

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *

01/01/2021

\$41.56

\$8.25

\$22.75

\$0.00

\$72.56

* If 30% or more of surfaces to be painted are new construction,

NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2***Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW****Effective Date -** 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.78	\$8.25	\$0.00	\$0.00	\$29.03
2	55	\$22.86	\$8.25	\$6.16	\$0.00	\$37.27
3	60	\$24.94	\$8.25	\$6.72	\$0.00	\$39.91
4	65	\$27.01	\$8.25	\$7.28	\$0.00	\$42.54
5	70	\$29.09	\$8.25	\$19.39	\$0.00	\$56.73
6	75	\$31.17	\$8.25	\$19.95	\$0.00	\$59.37
7	80	\$33.25	\$8.25	\$20.51	\$0.00	\$62.01
8	90	\$37.40	\$8.25	\$21.63	\$0.00	\$67.28

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)

01/01/2021

\$39.62

\$8.25

\$22.75

\$0.00

\$70.62

PAINTERS LOCAL 35 - ZONE 2

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.81	\$8.25	\$0.00	\$0.00	\$28.06
2	55	\$21.79	\$8.25	\$6.16	\$0.00	\$36.20
3	60	\$23.77	\$8.25	\$6.72	\$0.00	\$38.74
4	65	\$25.75	\$8.25	\$7.28	\$0.00	\$41.28
5	70	\$27.73	\$8.25	\$19.39	\$0.00	\$55.37
6	75	\$29.72	\$8.25	\$19.95	\$0.00	\$57.92
7	80	\$31.70	\$8.25	\$20.51	\$0.00	\$60.46
8	90	\$35.66	\$8.25	\$21.63	\$0.00	\$65.54

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	06/01/2021	\$35.00	\$8.60	\$16.64	\$0.00	\$60.24
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.91	\$8.60	\$16.64	\$0.00	\$61.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER	06/01/2021	\$35.78	\$12.91	\$14.82	\$0.00	\$63.51
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	08/01/2021	\$35.78	\$13.41	\$14.82	\$0.00	\$64.01
	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER LOCAL 56 (ZONE 1) For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER LOCAL 56 (ZONE 1)						

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/80/80
Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
PLUMBER & PIPEFITTER <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/31/2020	\$44.69	\$10.15	\$19.80	\$0.00	\$74.64
	08/30/2021	\$46.69	\$10.15	\$19.80	\$0.00	\$76.64

Apprentice - PLUMBER/PIPEFITTER - Local 51

Effective Date - 08/31/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.88	\$10.15	\$2.50	\$0.00	\$30.53
2	50	\$22.35	\$10.15	\$2.50	\$0.00	\$35.00
3	60	\$26.81	\$10.15	\$8.73	\$0.00	\$45.69
4	70	\$31.28	\$10.15	\$10.60	\$0.00	\$52.03
5	80	\$35.75	\$10.15	\$17.45	\$0.00	\$63.35

Effective Date - 08/30/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.68	\$10.15	\$2.50	\$0.00	\$31.33
2	50	\$23.35	\$10.15	\$2.50	\$0.00	\$36.00
3	60	\$28.01	\$10.15	\$8.73	\$0.00	\$46.89
4	70	\$32.68	\$10.15	\$10.60	\$0.00	\$53.43
5	80	\$37.35	\$10.15	\$17.45	\$0.00	\$64.95

Notes:

Steps 2000hrs. Prior 9/1/05; 40/40/45/50/55/60/65/75/80/85

Apprentice to Journeyworker Ratio:1:3

PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/31/2020	\$44.69	\$10.15	\$19.80	\$0.00	\$74.64
	08/30/2021	\$46.69	\$10.15	\$19.80	\$0.00	\$76.64
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	06/01/2021	\$36.00	\$8.60	\$16.64	\$0.00	\$61.24
	12/01/2021	\$36.91	\$8.60	\$16.64	\$0.00	\$62.15
	06/01/2022	\$37.81	\$8.60	\$16.64	\$0.00	\$63.05
	12/01/2022	\$38.66	\$8.60	\$16.64	\$0.00	\$63.90
	06/01/2023	\$39.56	\$8.60	\$16.64	\$0.00	\$64.80
	12/01/2023	\$40.46	\$8.60	\$16.64	\$0.00	\$65.70
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2021	\$36.00	\$8.60	\$16.64	\$0.00	\$61.24
	12/01/2021	\$36.91	\$8.60	\$16.64	\$0.00	\$62.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$33.40	\$13.75	\$15.80	\$0.00	\$62.95
	12/01/2021	\$34.19	\$13.75	\$15.80	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 653 - Southeastern Concrete (Weymouth)</i>	05/01/2021	\$24.00	\$12.41	\$6.90	\$0.00	\$43.31
	08/01/2021	\$24.00	\$12.91	\$6.90	\$0.00	\$43.81
	05/01/2022	\$24.50	\$12.91	\$6.90	\$0.00	\$44.31
	08/01/2022	\$24.50	\$13.41	\$6.90	\$0.00	\$44.81
	05/01/2023	\$25.00	\$13.41	\$6.90	\$0.00	\$45.31
	08/01/2023	\$25.00	\$13.91	\$6.90	\$0.00	\$45.81
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2021	\$46.60	\$12.28	\$17.15	\$0.00	\$76.03
	08/01/2021	\$48.03	\$12.28	\$17.15	\$0.00	\$77.46
	02/01/2022	\$49.46	\$12.28	\$17.15	\$0.00	\$78.89

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.30	\$12.28	\$4.31	\$0.00	\$39.89
2	60	\$27.96	\$12.28	\$17.15	\$0.00	\$57.39
3	65	\$30.29	\$12.28	\$17.15	\$0.00	\$59.72
4	75	\$34.95	\$12.28	\$17.15	\$0.00	\$64.38
5	85	\$39.61	\$12.28	\$17.15	\$0.00	\$69.04

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.02	\$12.28	\$4.31	\$0.00	\$40.61
2	60	\$28.82	\$12.28	\$17.15	\$0.00	\$58.25
3	65	\$31.22	\$12.28	\$17.15	\$0.00	\$60.65
4	75	\$36.02	\$12.28	\$17.15	\$0.00	\$65.45
5	85	\$40.83	\$12.28	\$17.15	\$0.00	\$70.26

Notes:
** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
(Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE	02/01/2021	\$46.85	\$12.28	\$17.15	\$0.00	\$76.28
ROOFERS LOCAL 33	08/01/2021	\$48.28	\$12.28	\$17.15	\$0.00	\$77.71
	02/01/2022	\$49.71	\$12.28	\$17.15	\$0.00	\$79.14
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER	02/01/2021	\$51.67	\$13.65	\$24.57	\$2.70	\$92.59
SHEETMETAL WORKERS LOCAL 17 - A	08/01/2021	\$53.42	\$13.65	\$24.57	\$2.75	\$94.39
	02/01/2022	\$55.17	\$13.65	\$24.57	\$2.80	\$96.19

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - SHEET METAL WORKER - Local 17-A
Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$21.70	\$13.65	\$5.89	\$0.00	\$41.24
2	42	\$21.70	\$13.65	\$5.89	\$0.00	\$41.24
3	47	\$24.28	\$13.65	\$11.13	\$1.48	\$50.54
4	47	\$24.28	\$13.65	\$11.13	\$1.48	\$50.54
5	52	\$26.87	\$13.65	\$12.08	\$1.58	\$54.18
6	52	\$26.87	\$13.65	\$12.33	\$1.59	\$54.44
7	60	\$31.00	\$13.65	\$13.70	\$1.76	\$60.11
8	65	\$33.59	\$13.65	\$14.65	\$1.88	\$63.77
9	75	\$38.75	\$13.65	\$16.56	\$2.08	\$71.04
10	85	\$43.92	\$13.65	\$17.96	\$2.28	\$77.81

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$22.44	\$13.65	\$5.89	\$0.00	\$41.98
2	42	\$22.44	\$13.65	\$5.89	\$0.00	\$41.98
3	47	\$25.11	\$13.65	\$11.13	\$1.48	\$51.37
4	47	\$25.11	\$13.65	\$11.13	\$1.48	\$51.37
5	52	\$27.78	\$13.65	\$12.08	\$1.58	\$55.09
6	52	\$27.78	\$13.65	\$12.33	\$1.59	\$55.35
7	60	\$32.05	\$13.65	\$13.70	\$1.76	\$61.16
8	65	\$34.72	\$13.65	\$14.65	\$1.88	\$64.90
9	75	\$40.07	\$13.65	\$16.56	\$2.08	\$72.36
10	85	\$45.41	\$13.65	\$17.96	\$2.28	\$79.30

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	06/01/2021	\$36.24	\$12.91	\$14.82	\$0.00	\$63.97
	08/01/2021	\$36.24	\$13.41	\$14.82	\$0.00	\$64.47
	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	06/01/2021	\$36.53	\$12.91	\$14.82	\$0.00	\$64.26
	08/01/2021	\$36.53	\$13.41	\$14.82	\$0.00	\$64.76
	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1	03/01/2021	\$62.45	\$10.00	\$21.25	\$0.00	\$93.70

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.86	\$10.00	\$11.99	\$0.00	\$43.85
2	40	\$24.98	\$10.00	\$12.70	\$0.00	\$47.68
3	45	\$28.10	\$10.00	\$13.41	\$0.00	\$51.51
4	50	\$31.23	\$10.00	\$14.13	\$0.00	\$55.36
5	55	\$34.35	\$10.00	\$14.84	\$0.00	\$59.19
6	60	\$37.47	\$10.00	\$15.55	\$0.00	\$63.02
7	65	\$40.59	\$10.00	\$16.26	\$0.00	\$66.85
8	70	\$43.72	\$10.00	\$16.98	\$0.00	\$70.70
9	75	\$46.84	\$10.00	\$17.69	\$0.00	\$74.53
10	80	\$49.96	\$10.00	\$18.40	\$0.00	\$78.36

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN	09/01/2020	\$36.86	\$10.90	\$12.45	\$0.00	\$60.21
ELECTRICIANS LOCAL 223						

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223

Effective Date - 09/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Notes: See Electrician Apprentice Wages

Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

Apprentice to Journeyworker Ratio:2:3***

TERRAZZO FINISHERS	02/01/2021	\$54.69	\$11.39	\$22.09	\$0.00	\$88.17
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2021	\$56.09	\$11.39	\$22.25	\$0.00	\$89.73
	02/01/2022	\$56.68	\$11.39	\$22.25	\$0.00	\$90.32

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.35	\$11.39	\$22.09	\$0.00	\$60.83
2	60	\$32.81	\$11.39	\$22.09	\$0.00	\$66.29
3	70	\$38.28	\$11.39	\$22.09	\$0.00	\$71.76
4	80	\$43.75	\$11.39	\$22.09	\$0.00	\$77.23
5	90	\$49.22	\$11.39	\$22.09	\$0.00	\$82.70

Effective Date - 08/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.05	\$11.39	\$22.25	\$0.00	\$61.69
2	60	\$33.65	\$11.39	\$22.25	\$0.00	\$67.29
3	70	\$39.26	\$11.39	\$22.25	\$0.00	\$72.90
4	80	\$44.87	\$11.39	\$22.25	\$0.00	\$78.51
5	90	\$50.48	\$11.39	\$22.25	\$0.00	\$84.12

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$42.07	\$8.60	\$17.72	\$0.00	\$68.39
	12/01/2021	\$43.08	\$8.60	\$17.72	\$0.00	\$69.40
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.79	\$8.60	\$17.72	\$0.00	\$67.11
	12/01/2021	\$41.80	\$8.60	\$17.72	\$0.00	\$68.12
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2021	\$40.67	\$8.60	\$17.72	\$0.00	\$66.99
	12/01/2021	\$41.68	\$8.60	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2021	\$50.19	\$13.75	\$15.80	\$0.00	\$79.74
	12/01/2021	\$51.33	\$13.75	\$15.80	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2021	\$36.82	\$12.91	\$14.82	\$0.00	\$64.55
	08/01/2021	\$36.82	\$13.41	\$14.82	\$0.00	\$65.05
	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2021	\$52.90	\$8.60	\$18.17	\$0.00	\$79.67
	12/01/2021	\$53.91	\$8.60	\$18.17	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2021	\$54.90	\$8.60	\$18.17	\$0.00	\$81.67
	12/01/2021	\$55.91	\$8.60	\$18.17	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2021	\$44.97	\$8.60	\$18.17	\$0.00	\$71.74
	12/01/2021	\$45.98	\$8.60	\$18.17	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE)	06/01/2021	\$46.97	\$8.60	\$18.17	\$0.00	\$73.74
LABORERS (FREE AIR TUNNEL)	12/01/2021	\$47.98	\$8.60	\$18.17	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL	06/01/2021	\$36.24	\$12.91	\$14.82	\$0.00	\$63.97
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	08/01/2021	\$36.24	\$13.41	\$14.82	\$0.00	\$64.47
	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
LABORERS - ZONE 2	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
	06/01/2022	\$37.06	\$8.60	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.91	\$8.60	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.81	\$8.60	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.71	\$8.60	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	06/01/2021	\$35.25	\$8.60	\$16.64	\$0.00	\$60.49
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$36.16	\$8.60	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR	06/01/2021	\$50.73	\$13.75	\$15.80	\$0.00	\$80.28
OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.88	\$13.75	\$15.80	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER	08/31/2020	\$44.69	\$10.15	\$19.80	\$0.00	\$74.64
PLUMBERS & PIPEFITTERS LOCAL 51	08/30/2021	\$46.69	\$10.15	\$19.80	\$0.00	\$76.64
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone)	08/30/2020	\$29.67	\$9.25	\$1.89	\$0.00	\$40.81
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables)	08/30/2020	\$42.03	\$9.25	\$10.27	\$0.00	\$61.55
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL	08/30/2020	\$34.62	\$9.25	\$10.07	\$0.00	\$53.94
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs)	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL)	08/30/2020	\$42.03	\$9.25	\$14.35	\$0.00	\$65.63
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL)	08/30/2020	\$37.09	\$9.25	\$10.87	\$0.00	\$57.21
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.)	08/30/2020	\$22.25	\$9.25	\$1.82	\$0.00	\$33.32
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN	08/30/2020	\$49.45	\$9.25	\$17.48	\$0.00	\$76.18
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 08/30/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.67	\$9.25	\$3.39	\$0.00	\$42.31
2	65	\$32.14	\$9.25	\$3.46	\$0.00	\$44.85
3	70	\$34.62	\$9.25	\$3.54	\$0.00	\$47.41
4	75	\$37.09	\$9.25	\$5.11	\$0.00	\$51.45
5	80	\$39.56	\$9.25	\$5.19	\$0.00	\$54.00
6	85	\$42.03	\$9.25	\$5.26	\$0.00	\$56.54
7	90	\$44.51	\$9.25	\$7.34	\$0.00	\$61.10

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)
Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.
 *** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
 **** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

Special Provisions

**SPECIAL PROVISIONS TO 2021 MASSDOT STANDARD SPECIFICATIONS
NEW STREET ROADWAY CONSTRUCTION & PETRONELLI WAY IMPROVEMENTS
BROCKTON, MA
JUNE 21, 2021**

SCOPE OF WORK

All work under this contract shall be done in conformance with the *Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2021 Edition*; the *October 2017 Construction Standard Details*, the *1990 Standard Drawings for Signs and Supports*; the *1996 Construction and Traffic Standard Details* (as relates to the Pavement Markings details only); the *2015 Overhead Signal Structure and Foundation Standard Drawings*; the *2009 Manual on Uniform Traffic Control Devices (MUTCD) with Massachusetts Amendments* and the *Standard Municipal Traffic Code*; the *1968 Standard Drawings for Traffic Signals and Highway Lighting*; the latest edition of *American Standard for Nursery Stock*; the Plans and these Special Provisions.

The work under this Contract consists of furnishing all necessary labor, materials and equipment required for roadway improvements along Petronelli Way from the intersection with Montello Street to Main Street and along New Street from the intersection with Petronelli Way to Franklin Street in the City of Brockton, Massachusetts.

The work includes full depth reconstruction; resetting existing granite curb; installation of new granite curb; cement concrete sidewalk; cement concrete driveway; cement concrete pedestrian ramps; drainage improvements; new decorative lighting; full-depth pavement construction; landscaping; pavement mill and overlay; new pavement markings; signing and other miscellaneous items of work.

WORK SCHEDULE

The Contractor will be required to provide schedule to the Engineer within ten (10) business days upon a written Notice to Proceed. In addition, the Contractor will provide monthly updates to the schedule upon commencement of the work until substantial completion.

Work on this project is restricted to a normal eight-hour day, five-day week, with the Contractor and all Subcontractors working on the same shift.

No work shall be done on this contract on Saturday, Sunday, a State or Federal holiday or on the day before or the day after a long weekend that involves a holiday without prior approval by the City of Brockton or Engineer.

SHOP DRAWINGS

The Contractor will be required to submit shop drawings, catalog cuts and or product information for items listed below within fifteen (15) business days upon a written Notice to Proceed:

Item No.	Description	Required Documents
201.	Catch Basin	EJIW Product Sheet
202.	Manhole	EJIW Product Sheet
222.3	Frame and Grate (Or Cover) Municipal Standard	EJIW Product Sheet
241.12	12 Inch Reinforced Concrete Pipe	Product Sheet
303.06	6 Inch Ductile Iron Water Pipe (Mechanical Joint)	Product Sheet
309.	Ductile Iron Fittings for Water Pipe	Product Sheet
350.06	8" x 6" Tapping Sleeve, Valve and Box	Product Sheet
376.	Hydrant	Product Sheet
460.	Hot Mix Asphalt	MassDOT Appd Mix Design (Binder/Top)
697.1	Silt Sack	Product Sheet from MassDOT Appd Mat. List
701.	Cement Concrete Sidewalk	MassDOT Appd Concrete Mix Design
701.1	Cement Concrete Sidewalk at Driveways	MassDOT Appd Concrete Mix Design
701.2	Cement Concrete Pedestrian Ramp (Incl. Det. Panel)	MassDOT Appd Concrete Mix & Material List
804.3	3 Inch Electrical Conduit Type NM – Plastic – (UL)	Product Sheet
811.222	Precast Handhole	Product Sheet
812.09	Light Standard Foundation Precast	Shop Drawing and Structural Calculations Stamped by MA PE
813.30	Wire Type 7 No. 10 General Purpose	Product Sheet
813.32	Wire Type 7 No. 6 General Purpose	Product Sheet
813.52	Wire Type 10 - #8 Grounding and Bonding	Product Sheet
832.	Warning-Reg. & Rte. Mkr. – Alum. Panel (Type A)	Drawings
866.104	4 Inch Reflectorized White Line (Thermoplastic)	Appd Batch Numbers from MassDOT
866.112	12 Inch Reflectorized White Line (Thermoplastic)	Appd Batch Numbers from MassDOT
867.104	4 Inch Reflectorized Yellow Line (Thermoplastic)	Appd Batch Numbers from MassDOT
874.	Street Name Sign	Drawings

HOLIDAY WORK RESTRICTIONS FOR CALENDAR YEAR 2021

(Supplementing Subsection 7.09)

The City may authorize work to continue during these specified time periods if it is determined the work will not negatively impact the traveling public. The following are the holiday work restrictions for the remainder of calendar year 2021:

Independence Day (Observed) (Federal Holiday)

Monday, July 5, 2021:

No work allowed starting July 2nd at noon until 7:00 AM July 6, 2021.

Labor Day (Federal Holiday)

Monday, September 6, 2021:

No work allowed.

Columbus Day (Federal Holiday)

Monday, October 11, 2021:

No work allowed.

Veterans Day (Federal Holiday)

Thursday, November 11, 2021:

No work allowed.

Thanksgiving Day (Federal Holiday)

Thursday, November 25, 2021:

No work allowed from noon on Wednesday, November 24, 2021 until the normal start of business on the Monday, November 29, 2021.

Christmas Day (Federal Holiday)

Friday, December 24, 2021:

No work allowed from Thursday, December 24, 2021 until the normal start of business on Monday, December 27, 2021.

ARCHITECTURAL ACCESS BOARD TOLERANCES

The Contractor is hereby notified that they are ultimately responsible for constructing all project elements in strict compliance with the current AAB/ADA rules, regulations and standards.

All construction elements in this project associated with sidewalks, walkways, pedestrian ramps and curb cuts are controlled by 521CMR - Rules and Regulations of the Architectural Access Board (AAB).

The AAB Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope nor for dimensions less than the minimum dimensions.

Contractor shall establish grade elevations at all wheel chair ramp locations, and shall set transition lengths according to the appropriate table in the Construction Standards (or to the details shown on the plans).

All pedestrian ramp joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints.

All detectable warning panels shall be color 'brick red' or as approved by the City. All standard pedestrian ramps, raised crosswalks and intersections will incorporate detectable warning panels as shown on the plans or as required by the Engineer.

PUBLIC SAFETY AND CONVENIENCE (Supplementing Subsection 7.09)

The Contractor shall provide necessary access for fire apparatus and other emergency vehicles through the work zones to abutting properties at all times.

Sweeping and cleaning of surfaces beyond the limits of the project to clean up material caused by spillage or vehicular tracking during the various phases of the work shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation.

The Contractor is responsible for all temporary traffic management during construction including vehicular, pedestrian and bicycle movement thru the project limits. The work may require use of devices including cones, drums, barricades, signs, temporary pavement markings, etc. All labor, materials, equipment and incidental costs required to maintain a safe work zone as required to complete the work as shown on the plans or as required by the Engineer will be incidental to Item 851.1 Safety Controls for Construction Operations.

UNIFORMED POLICE OFFICERS

The cost for police details for this project will be covered as an allowance under Item 999.001 Police Detail. The Contractor shall coordinate with the City of Brockton Police Department to determine the need for and to request and schedule police details in order to provide for public safety and to maintain a smooth flow of traffic through the construction zones affected by the work.

The Contractor shall provide the City Traffic Control Officer with a minimum 24-hour notice indicating the time of day, street location and confirm the number of officers required for traffic control the following day (s). The Contractor will notify the City Traffic Control Officer a minimum of 2 hours of any police detail cancellation due to weather or conditions beyond their control they will not require the scheduled detail (s).

The Contractor will be responsible for paying all invoices from the Brockton Police Department for police details ordered/required for this project.

The Contractor will be responsible for any police detail (s) invoice at no cost to the project, should details not be needed or if the Contractor fails to cancel the details as described herein.

The Contractor shall provide barricades, barrier fences, traffic signs, and other temporary traffic control devices as required by the City Traffic Control Officer or the Engineer to protect the work area from traffic, pedestrians and bicyclists. All labor, materials or equipment related to this effort will be incidental to Item 851. Safety Controls for Construction Operations.

PRIMARY CITY CONTACTS

Planning and Economic Development
City Hall
45 School Street
Brockton, MA 02301

Rob May,
Director
(508)-580-7113
rmay@cobma.us

Police
7 Commercial Street
Brockton, MA 02301

John Crowley, Chief
(508) 941-0200 (Main & Details)
(508) 897-5134 (Traffic)

Fire
560 West Street
Brockton, MA 02301

Michael F. Williams, Chief
(508) 588-0585 (Main)
(508) 583-2323 (Signal Division)

BSC Group, Inc.
803 Summer Street
Boston, MA 02127

William G. Paille, P.E.
(617) 896.4312
wpaille@bscgroup.com

NOTICE TO OWNERS OF UTILITIES (Supplementing Subsection 7.13)

Before commencing work on the project, the Contractor shall be responsible for contacting all utility companies servicing the area 72 hours prior, to obtain construction requirements, standards, and to provide adequate notice of commencement of work. The Contractor's attention is further directed to the requirements of Protection of Utilities and Property herein included in these Special Provisions.

PROTECTION OF UNDERGROUND FACILITIES

The Contractor's attention is directed to the necessity of making their own investigation to assure that no damage to existing structures, drainage lines, water lines, sanitary sewer lines, street light conduits, etcetera, will occur.

The Contractor shall notify Massachusetts DIG SAFE and procure a Dig Safe Number for each location prior to disturbing existing ground in any way. The telephone number of the Dig Safe Call Center is 811 or 1-888-344-7233.

UTILITY CONTACTS

Electric

National Grid
280 Melrose Street
Providence, RI 02907-2152

Thomas Capobianco
(401) 784-7248
thomas.capobianco@nationalgrid.com

Gas

Columbia Gas of Massachusetts
995 Belmont Street
Brockton, MA 02301

Lauren Cantrell (Curan)
(508) 580-0100 Ext 1354
LCantrel@nisource.com

Spectra Energy Transmission, LLC
8 Wilson Way
Westwood, MA 02090

Kathy M. Aruda
(508) 938-7728
kmaruda@spectraenergy.com

Telephone

Verizon
385 Myles Standish Blvd.
Taunton, MA 02780

Karen Mealey
(774)-409-3160
karen.m.mealey@verizon.com

Water and Sewer

Brockton City Hall
45 School Street
Brockton, MA 02301

Pat Hill, Interim DPW Commissioner
(508)-580-7135
dpw@cobma.us

Railroad

MBTA
100 Summer Street – Suite 1200
Boston, MA 02110

Christina Bresnahan
(617)-222-3361
CBresnahan@mbta.com

Cable

Comcast
PO Box 6505
Chelmsford, MA 01824

Wendy Brown
(978) 848-5183
Wendy_Brown@cable.comcast.com

AT&T / Teleport Communications
50 Mall Road – Suite 203
Burlington, MA 01803

David Edgar
(781) 221-8400
David.Edgear@sienaengineeringgroup.com

Fire Alarm

Brockton Fire Signal Division
560 West Street
Brockton, MA 02301

(508)-583-2323

The Contractor shall make his own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of his operations.

The Contractor shall notify "Mass. DIG SAFE" and procure a DIG SAFE number of each location prior to disturbing ground in any way.

"DIG-SAFE" Call Center: Telephone 1- (888) 344-7233

PROTECTION OF UTILITIES AND PROPERTY (Supplementing Subsection 7.13)

The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults or other structures shall, at his expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained. The Contractor shall also be responsible for the repair or replacement, at his own expense, of any damage to such structures caused by his acts or neglect, and shall leave them in the same condition as they existed prior to commencement of the

work. In case of damage to utilities, the Contractor shall promptly notify the utility owner and shall, if requested by the Engineer, furnish labor and equipment to work temporarily under the utility owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the Department or by the utility owner that suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefore.

If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable, in the judgment of the Engineer, to do the work called for under this Contract, the Contractor shall protect and maintain the services in such utilities and structures and the Engineer will, as soon thereafter as reasonable, cause the position of the utilities to be changed or take such other actions deemed suitable and proper.

If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals for completing all the work involved in protecting or repairing property as specified in this section, shall be considered included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefore.

PROVISIONS FOR TRAVEL AND PROSECUTION OF THE WORK

(Supplementing Subsection 8.03)

72 hours prior to starting any work under this Contract, the Contractor shall prepare, and submit to the Engineer for approval, a plan (based on the Contract traffic management plans) that indicates the traffic routing proposed by the Contractor during the various stages and time periods of the work and the temporary barricades, signs, drums and other traffic control devices to be employed during each stage and time period of the work to maintain traffic and access to abutting properties.

Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed at the end of each working day.

Signs having messages that are irrelevant to normal traffic conditions shall be removed or properly covered at the end of each work period. Signs shall be kept clean at all times and legends shall be distinctive and unmarred.

DISPOSAL OF SURPLUS MATERIALS

All existing and other materials not required or needed for use on the project, and not required to be removed and stacked, shall become the property of the Contractor and shall be removed from the site during the construction period and legally disposed of. No separate payment will be made for this work, but all costs in connection therewith shall be included in the prices bid for various Contract items.

DRAINAGE

The Contractor shall maintain the drainage system in the project areas to provide continuous drainage of the roadway and construction area.

All drainage castings in new pavement areas shall be installed at base or binder course grade, as required by the Engineer, and reset to proposed finish surface grade prior to placement of the pavement surface course. All pipes and structures installed as part of this Contract shall be left in a clean and operable condition at the completion of the work.

No separate payment will be made for the maintenance or cleaning of the existing drainage system but all costs in connection therewith shall be included in the unit prices bid for the various Contract items.

SHEETING, BRACING & PLATING

The Contractor shall furnish, place, and remove all sheeting and bracing required to support the sides of all trenches or other excavations for this project.

In addition, the Contractor shall also furnish, place, and remove all steel plating required to cover trenches or other excavations for this project. Steel plates will be set over the trenches so they sit firmly and evenly over the trench so the edge of the plate is a minimum of 2 feet beyond the edge of the trench. If plates are required over an extended period of time, the edges of the plate will be required to be set into the existing pavement so the top of the plate is flush with the pavement surface.

The Contractor shall be solely responsible for the safety of the workmen and the adjacent facilities from danger of caving and sliding. All work to be done shall be in strict accordance with the Department of Labor, Occupational Safety and Health Administration regulations and suggested practices for construction excavations and/or other applicable codes and regulations. Special precautions shall be taken to guard against any damage to or settlement of pavements, buildings, walls, pipes, ducts or other structures and facilities which are adjacent to the work.

The cost of providing and removing sheeting, shoring and bracing shall be included in the cost of the various items of work under this Contract and no additional compensation will be allowed therefore.

MATERIALS AND EQUIPMENT REMOVED AND STACKED

All materials scheduled to be removed and stacked shall be carefully removed, loaded, transported and carefully stacked at the City of Brockton's DPW yard located at 301 Oak Hill Way, Brockton, MA 02301. If the City determines that any part of the stacked materials is unsuitable for re-use, or if the City decides to abandon part or all of such materials, said materials shall become the property of the Contractor who will be responsible for the safe and legal disposal of said materials outside and away from the limits of the project, without additional compensation.

The Contractor shall provide the City DPW Commissioner a minimum 7-day notice prior to delivery of any materials or equipment to be removed and stacked.

EXISTING BOUNDS AND MONUMENTS

The Contractor shall exercise due care when working around all property bounds and markers identified to be retained. Should any damage to a property bound or marker identified on the plans to be retained result from the actions of the Contractor, it shall be replaced and/or realigned by the Contractor at no cost to the project.

RESTRICTIONS AND MINIMUM REQUIREMENTS

The following lane access and egress control and restrictions within the project area shall serve as a strict guide for the Contractor to follow to assure normal vehicular and pedestrian operations during the construction process:

1. At least one travel lane in each direction along Petronelli Way and Franklin Street shall remain open to traffic at all times unless otherwise authorized by the City of Brockton and the Engineer. It is anticipated that New Street will be closed during construction from Petronelli Way to Franklin Street and from Franklin Street to Court Street. The Contractor will be required to coordinate with and obtain approval from the Brockton Police Department regarding all temporary traffic operations throughout the project.
2. The Contractor shall provide safe and reasonable access and egress to all properties abutting the work.
3. After construction hours, all traffic lanes shall be open to traffic unless otherwise authorized by the City of Brockton and the Engineer.
4. No detouring of traffic shall be allowed without the permission of the City of Brockton and the Engineer.

The Contractor shall conduct their operations such that the interruption to rush hour traffic is kept to a minimum. The Contractor shall schedule their work such that the length of time during which any section of roadway is not paved will be kept to a minimum.

NOTIFICATION TO ABUTTERS

The Contractor shall notify each abutting property owner or building manager at least 48 hours before the start of construction that is proposed to impact access to their property. The Contractor will inform the owner of the property or building manager as to the type of work that will be performed, the period of time (hours, time of day, number of days) and any restrictions that may result such as access to building, parking, utilities, etc. The Contractor will provide a contact name and number to each property owner or building manager to maintain communication throughout the project.

TEMPORARY ACCESS TO AREA ABUTTERS

Access to all abutting properties must be maintained at all times. The Contractor shall provide a safe and reasonable ready means to enter and exit all private buildings, professional offices and any other businesses or residences in the project area, both day and night, for the duration of the project. The Contractor may be required to install temporary measures (i.e. wood planking) across

excavated areas of sidewalk to allow safe access to buildings and/or storefronts. Such measures will require approval from the City of Brockton or the Engineer prior to installation.

The Contractor shall prepare and submit to the Engineer a Maintenance of Pedestrian Access Plan outlining procedures and measures taken in maintaining safe pedestrian access through the work zone, safe means of access and egress to adjacent buildings and businesses in conformance to ADA/AAB regulations.

ELECTRICAL PERMIT & INSPECTION

This project requires installation of new electrical conduit, wire, lighting fixtures and components, tying into an existing lighting load center. The Contractor will be required to contact, coordinate and obtain a permit from the City of Brockton Highway Division of the Department of Public Works prior to beginning any electrical-related work and comply with latest electrical code and City requirements. Refer to the City website for more information:

<http://www.brockton.ma.us/Government/Departments/DPW/Highway.aspx>

ITEM 100.001**ELECTRICIAN****HOUR**

The work under this item shall conform to the relevant provisions of the Standard Specifications and the following:

DESCRIPTION

The work shall include the inspection and evaluation of the existing electrical system providing power to the existing lights along Petronelli Way including the existing lighting control cabinet located at the intersection of Main Street and Legion Parkway. In addition, the work includes modifying the existing cabinet to provide new service to the proposed lights along New Street.

CONSTRUCTION METHODS

All electricians performing any investigations, testing, opening pull boxes, access ports to existing street lights or the existing lighting control cabinet will be licensed by the State of Massachusetts. The Contractor shall submit copies of the Electrician's current Massachusetts License prior to the start of the project.

The existing lighting control cabinet located at the intersection of Main Street and Legion Parkway will be configured to accommodate the following:

- The proposed ornamental lights and GFCI outlets along Petronelli Way from Main Street to Montello Street so the lights and outlets can be powered separately using circuit breakers (10 lights and outlets);
- The proposed ornamental lights and GFCI outlets along New Street from Petronelli Way to Court Street so the lights and outlets can be powered separately using circuit breakers (5 lights and outlets)

COMPENSATION

Item 100.001 Electrician will be measured for payment by the hour for a Massachusetts licensed electrician and Assistant to determine the source of power for the existing and proposed street lights located within the project limits including investigation into pull boxes, testing, inspection, etc.

Item 100.001 Electrician will be paid for at the contract unit price per hour which price shall include all labor including an Assistant, material, equipment and incidental costs required to complete the work including modifying the existing cabinet to power and control the new lights along Petronelli Way and New Street.

Conduit will be paid for under Item 804.3 3 Inch Electrical Conduit Type NM – Plastic –(UL). Wire will be paid for under Item 813.30 Wire Type 7 No. 10 General Purpose and Item 813.52 Wire Type 10 – No. 8 Grounding and Bonding respectively.

ITEM 152.02**STRUCTURAL SOIL****CUBIC YARD**

The work under this item shall conform to the relevant provisions of the Standard Specification and the following:

DESCRIPTION

The work shall include preparation, placement and compaction of structural soil medium on a prepared subgrade for the purpose of supporting new tree plantings located within the sidewalks along Petronelli Way and New Street as shown on the plans or as required by the Engineer.

Structural soil shall consist of a uniformly graded mix of sand, compost and loam. The mix design shall be by volume, uniformly blended and compacted using mechanical equipment. Mixing ratio shall be 4-part coarse sand, 1-part loam and 1-part compost. The mixing procedure shall be as follows:

Structural soil should be premixed to a uniform consistency.

Submittals

Submit sieve analysis of sand to be used per the requirements of section 154.00 Sand Borrow of the Standard Specifications. Submit product data for organic amendment (compost) including manufacturers contact information, material content, and source.

MATERIALS

Sand Borrow	M1.04.0
Loam Borrow	M1.05.0

Organic amendment shall be a well-rotted composted leaf mold or other acceptable organic matter as approved by the Engineer. Compost shall pass a 1-inch sieve and have a pH between 5.5 to 8.0. Soluble salt content shall not exceed 2.0 mmhos/cm (dS.m).

CONSTRUCTION METHODS**Delivery, Storage, and Handling**

Do not deliver or place materials in frozen condition. Do not store unprotected from large rainfall events. Do not allow excess water to enter the site prior to compaction (washing of tools, trucks, etc.) If water is introduced into the material after grading, allow material to drain to near optimum compaction moisture content.

Site Preparation**Placement of Structural Soil**

Excavate to the required depths and dimensions as shown on Plans or as required by the Engineer.

Excavate to the required depths and dimensions as shown on the Plans or as required by the Engineer. Place structural soil in lifts not greater than six inches and compact using hand compaction methods as required by the Engineer.

Clean Up

Protect adjacent walks, building facia, brick banding, trees, curb, light base/poles, pull boxes, and utilities from damage or staining by the soil. Upon completion of the structural soil material installation operations, clean areas within the contract limits. Remove all excess fills soils and mix stockpiles, and legally dispose of all waste materials, trash, and debris. Remove all tools and equipment and provide a clean, clear site. Any damage to new work adjacent to the structural soil areas shall be repaired by the General Contractor at no cost to the project.

COMPENSATION

Item 152.02 Structural Soil will be measured per cubic yard of material in place.

Item 152.02 Structural Soil will be paid for at the contract unit price per cubic yard which price shall include all labor, material, equipment and incidental costs required to complete the work including any testing of materials.

ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM

The work shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all City of Brockton construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH).

Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the City of Brockton, Contractor, and Subcontractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection, required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be measured and paid for at the Lump Sum Bid Price.

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

ITEM 180.02

PERSONAL PROTECTION LEVEL C UPGRADE

HOURLY

The work shall consist of providing appropriate personal protective equipment (PPE) for all personnel in an area either containing or suspected of containing a hazardous environment.

Contingencies for upgrading the level of protection for on-site workers will be identified in the EHASP and the Contractor shall have the capability to implement the personal protection upgrade in a timely manner. The protective equipment and its use shall be in compliance with the EHASP and all appropriate regulations and/or standards for employee working conditions.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Personal Protection Level C Upgrade will be measured and paid only upon upgrade to Level C and will be at the contract unit price, per hour, per worker, required in Level C personal protection. No payment will be made to the Contractor to provide Level D PPE.

ITEM 180.03

LICENSED SITE PROFESSIONAL SERVICES

HOOR

Within limited areas of the project site, soils, sediments and/or groundwater may be contaminated. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include sampling, analysis and characterization of potentially contaminated media, preparation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the Massachusetts Contingency Plan (MCP). LSP hours related to the characterization and disposal of contaminated soil and/or sediment are incidental to the disposal items. An estimate of LSP services to be provided shall be submitted to the Engineer for approval before any LSP activity begins.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the DEP shall be submitted for all work assignments listed for the LSP and environmental technicians.

The LSP shall evaluate soil and/or sediment with discoloration, odor, and presence of petroleum liquid or sheening on the groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on site calibration of all field screening instrumentation.

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect soil and/or sediment. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services item. The LSP shall adequately characterize subsurface

conditions prior to backfill in areas where contaminated material has been excavated. The Engineer shall approve the locations of the testing sites prior to the sampling.

Contaminated soil, sediment and/or groundwater shall be handled in accordance with all applicable state and federal statutes, regulations and policies. The LSP shall adequately characterize contaminated media for comparison to the requirements of the MCP. The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise format which tracks the excavation, stockpiling, analysis and reuse/disposal of all suspect contaminated soils, sediments and groundwater. These records shall be up-to-date and available to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results and proposed course of action. The laboratory report together with Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, penalties and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, penalties and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both the City of Brockton and the DEP through the Engineer. Any notification of release shall be approved by the Department before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

LABORATORY TESTING IN SUPPORT OF LSP SERVICES

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included.

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project

area and to perform laboratory analyses on those samples. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The contractor will be reimbursed upon satisfactory written evidence of payment. The contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider. Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

Laboratory Testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

<u>ITEM 181.11</u>	<u>DISPOSAL OF UNREGULATED SOIL</u>	<u>TON</u>
<u>ITEM 181.12</u>	<u>DISPOSAL OF REGULATED SOIL IN-STATE FACILITY</u>	<u>TON</u>
<u>ITEM 181.13</u>	<u>DISPOSAL OF REGULATED SOIL OUT-OF-STATE FACILITY</u>	<u>TON</u>
<u>ITEM 181.14</u>	<u>DISPOSAL OF HAZARDOUS WASTE</u>	<u>TON</u>

The work under these Items shall include the transportation and disposal of contaminated material excavated, or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling or reuse will be referred to as “disposal” for the purposes of this specification. However, regardless of the use of the term herein, there will be no compensation under these items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport and disposal of contaminated soils. Such coordination will include the Engineer and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification as described below and in accordance with the applicable laws of local, state and federal authorities. The Contractor shall be responsible for identifying disposal facility (ies) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project. The Contractor shall be responsible for hiring a Licensed Site Professional (LSP) and all ancillary professional services including laboratories as needed for this work. The Contractor will be responsible for obtaining all permits, approvals, manifests, waste profiles, Bills of Lading, etc. subject to the approval of the Engineer prior to the removal of the contaminated soil from the site. The Contractor and LSP shall prepare and submit to the Engineer for approval all documents required under the Massachusetts Contingency Plan (MCP) and related laws and environmental regulations to conduct characterization, transport, and disposal of contaminated materials.

CLASSES OF CONTAMINATED SOILS

The Contractor and its LSP shall determine if soil excavated or soil to be excavated is unregulated soil or contaminated soil as defined in this section. Such materials shall be given a designation for purposes of reuse or disposal based on the criteria of the MCP. Soils and sediments which are not suitable for reuse will be given a designation for purposes of off-site disposal based on the characterization data and disposal facility license requirements. The Classes of Contaminated Soils are defined as follows:

UNREGULATED SOIL consists of soil, fill and dredged material with measured levels of oil and hazardous material (OHM) contamination at concentrations below the applicable Reportable Concentrations (RCs) presented in the MCP. Unregulated soil consists of material which may be reused (or otherwise disposed) as fill within the Commonwealth of Massachusetts subject to the non-degradation criteria of the MCP (310 CMR 40.0032(3)), in a restricted manner, such that they are sent to a location with equal or higher concentrations of similar contaminants. Disposal areas include licensed disposal facilities, approved industrial settings in areas which will be capped or covered with pavement or loamed and seeded, and for purposes of this project should be reused as fill within the project site construction corridor whenever possible. The material cannot be placed in residential and/or environmentally sensitive (e.g. wetlands) areas. Under no circumstances shall contaminated soils be placed in an uncontaminated or less contaminated area (including the area above the groundwater table if this area shows no sign of contamination).

The Contractor shall submit to the City of Brockton the proposed disposal location for unregulated soils for approval. If such a disposal location is not a licensed disposal facility, the Contractor shall submit to the Engineer analytical data to characterize the disposal area sufficiently to verify that the unregulated material generated within the City of Brockton construction project limits is equal to or

less than the contaminant levels at the disposal site and meets the non-degradation requirements of the MCP. In addition, the Contractor shall provide written confirmation from the owner of the proposed disposal location that they have been provided with the analytical data for both the materials to be disposed as well as the disposal site characterization and that s/he agrees to accept this material. A Material Shipping Record or Bill of Lading, as appropriate, shall be used to track the off-site disposal of unregulated soil and a copy, signed by the disposal facility or property owner, shall be provided to the Engineer in order to document legal disposal of the unregulated material.

The cost of on-site disposal of unregulated soil within the project area will be considered incidental to the item of work to which it pertains.

REGULATED SOIL consists of materials containing measurable levels of OHM that are equal to or exceed the applicable Reportable Concentrations for the site as defined by the MCP, 310 CMR 40.0000. Regulated soil which meets the MCP reuse criteria of the applicable soil/groundwater category for this project area may be reused on site provided that it meets the appropriate geotechnical criteria established by the Engineer. Regulated Soil may be reused (as daily or intermediate cover or pre-cap contouring material) or disposed (as buried waste) at lined landfills within the Commonwealth of Massachusetts or at an unlined landfill that is approved by the Massachusetts Department of Environmental Protection (DEP) for accepting such material, in accordance with DEP Policy #COMM-97-001, or at a similar out-of-state facility. It should be noted that soils which exceed the levels and criteria for disposal at in-state landfills, as outlined in COMM-97-001, may be shipped to an in-state landfill, but require approval from the DEP Division of Solid Waste Management and receiving facility. An additional management alternative for this material is recycling into asphalt. Regulated Soils may also be recycled at a DEP approved recycling facility possessing a Class A recycling permit subject to acceptance by the facility and compliance with DEP Policy #BWSC-94-400. Regulated Soil removed from the site for disposal or treatment must be removed via an LSP approved Bill of Lading, Manifest or applicable material tracking form. This type of facility shall be approved/permitted by the State in which it operates to accept the class of contaminated soil in accordance with all applicable local, state and federal regulations.

HAZARDOUS WASTE consists of materials which must be disposed of at a facility permitted and operated in full compliance with Federal Regulation 40 CFR 260-265, Massachusetts Regulation 310 CMR 30.000, Toxic Substances Control Act (TSCA) regulations, or the equivalent regulations of other states, and all other applicable local, state, and federal regulations. All excavated materials classified as hazardous waste shall be disposed of at an out-of-state permitted facility. This facility shall be a RCRA hazardous waste or TSCA facility, or RCRA hazardous waste incinerator. This type of facility shall be approved/permitted by the State in which it operates to accept hazardous waste in accordance with all applicable local, state and federal regulations and shall be permitted to accept all contamination which may be present in the soil excavate. The Contractor shall ensure that, when needed, the facility can accept TSCA waste materials i.e. polychlorinated biphenyls (PCBs). Hazardous waste must be removed from the site for disposal or treatment via an LSP approved Manifest.

MONITORING/SAMPLING/TESTING REQUIREMENTS

The Contractor shall be responsible for monitoring, sampling and testing during and following excavation of contaminated soils to determine the specific class of contaminated material. Monitoring, sampling and testing frequency and techniques should be performed in accordance with Item 180.03 – LSP Services. Additional sampling and analysis may be necessary to meet the requirements of the disposal facility license. The cost of such additional sampling and analysis shall be included in the bid cost for the applicable disposal items. The Contractor shall obtain sufficient information to demonstrate that the contaminated soil meets the disposal criteria set by the receiving facility that will accept the material.

No excavated material will be permanently placed on-site or removed for off-site disposal until the results of chemical analyses have been received and the materials have been properly classified. The Contractor shall submit to the Engineer results of field and laboratory chemical analyses tests within seven days after their completion, accompanied by the classification of the material determined by the Contractor, and the intended disposition of the material. The Contractor shall submit to the Engineer for review all plans and documents relevant to LSP services, including but not limited to, all documents that must be submitted to the DEP.

WASTE TRACKING

Copies of the fully executed Weight Slips/Bills of Lading/ Manifests/Material Shipping Records or other material tracking form received by the Contractor from each disposal facility and for each load disposed of at that facility, shall be submitted to Engineer and the Contractor's LSP within three days of receipt by the Contractor. The Contractor is responsible for preparing and submitting such documents for review and signature by the LSP or other appropriate person with signatory authority, three days in advance of transporting soil off-site. The Contractor shall furnish a form attached to each manifest or other material tracking form for all material removed off-site, certifying that the material was delivered to the site approved for the class of material. If the proposed disposition of the material is for reuse within the project construction corridor, the Contractor shall cooperate with the City of Brockton to obtain a suitable representative sample(s) of the material to establish its structural characteristics in order to meet the applicable structural requirements as fill for the project.

All material transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the selected disposal or recycling facility and be accompanied by the applicable shipping paper. At a minimum, truck bodies must be structurally sound with sealed tail gates, and trucks shall be lined, and loads covered with a liner, which shall be placed to form a continuous waterproof tarpaulin to protect the load from wind and rain.

DECONTAMINATION OF EQUIPMENT

Tools and equipment which are to be taken from and reused off site shall be decontaminated in accordance with applicable local, state and federal regulations. This requirement shall include, but not be limited to, all tools, heavy machinery and excavating and hauling equipment used during excavation, stockpiling and handling of contaminated material. Decontamination of equipment is considered incidental to the applicable excavation item.

REGULATORY REQUIREMENTS

The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to contaminated material handling during excavation and disposal activities. The City of Brockton shall not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers and others. The Contractor shall comply with all rules, regulations, laws, permits and ordinances of all authorities having jurisdiction including, but not limited to, Massachusetts DEP, the U.S. Environmental Protection Agency (EPA), Federal Department of Transportation (DOT), Massachusetts Water Resources Authority (MWRA), the Commonwealth of Massachusetts and other applicable local, state and federal agencies governing the disposal of contaminated soils.

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to the City of Brockton. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse the City of Brockton for all costs it incurs, including penalties and/or for fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

SUBMITTALS

I. Summary of Sampling Results, Classification of Material and Proposed Disposal Option.

The following information, presented in tabular format, must be submitted to the Engineer for review and approval prior to any reuse on-site or disposal off-site. This requirement is on-going throughout the project duration. At least two weeks prior to the start of any excavation activity, the Contractor shall submit a tracking template to be used to present the information as stipulated below. Excavation will not begin until the format is acceptable to the City of Brockton.

Characterization Reports will be submitted for all soil, sediment, debris and groundwater characterized through the sampling and analysis program. Each report will include a site plan which identifies the sampling locations represented in the Report. The Construction Plan sheets may be used as a baseplan to record this information.

The Sampling Results will be presented in tabular format. Each sample will be identified by appropriate identification matching the sample identification shown on the Chain of Custody Record. The sample must also be identified by location (e.g. grid number or stockpile number). For each sample, the following information must be listed: the classification (unregulated, regulated, etc.), proposed disposal option for the stockpile or unit of material represented, and, all analytical results.

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

II. Stockpiling, Transport, and Disposal.

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to the City of Brockton.

Excavation and Stockpiling Protocol:

Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

Disposal and Recycling Facilities:

1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.
2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. The City of Brockton reserves the right to reject any facility on the basis of poor compliance history.

Transportation:

The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

III. Material Tracking and Analytical Documentation for Reuse/Disposal.

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to the City of Brockton.

All soils, sediments and demolition debris must be tracked from the point of excavation to stockpiling to onsite treatment/processing operations to off-site disposal or onsite reuse as applicable.

Demolition Debris:

Demolition debris must be tracked if the debris is stockpiled at a location other than the point of origin or if treatment or material processing is conducted. Identification of locations will be based on the station-offset of the location. The tracking table will identify date and point of generation,

any field screening such as PID or dust monitoring, visual observations/comments, quantity, and stockpile ID/processing operation location. For each unit of material tracked, the table will also track reuse of the material on-site, providing reuse date, location of reuse as defined by start and end station, width of reuse location by offset, the fill elevation range, quantity, and finish grade for said location. For demolition debris which is not reused on site, the table will also track disposal of the material as defined by disposal date, quantity and disposal facility. The table must provide a reference to any analytical data generated for the material.

Soil/Sediment:

Soil excavation will be identified based on the station-offset of the excavation location limits. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations, quantity, and stockpile number/location. For each unit of material tracked, the table will also track reuse of the material on-site and disposal of the material off-site using the same categories identified for demolition debris above.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Disposal of contaminated soil shall be measured for payment by the Ton of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under all of these items shall be incidental to the work with no additional compensation.

ITEM 181.11 Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in tons, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.12 Measurement for Disposal of Regulated Soil – In-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved in-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.13 Measurement for Disposal of Regulated Soil - Out-of-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved out-of-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.14 Measurement for Disposal of Hazardous Waste shall be under the Contract Unit Price by the weight in tons of hazardous waste removed from the site and transported to and disposed of at the licensed hazardous waste facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 182.1**INSPECTION AND TESTING FOR ASBESTOS****LUMP SUM**

The work under this item shall include inspecting and testing of all materials suspected of containing asbestos. When any demolition is required to enable the inspection and testing of the suspected material, it will be considered incidental to this Item and the contractor must perform all asbestos handling and testing in accordance with the regulations stated below. The Contractor must provide for a Massachusetts Department of Labor and Workforce Development (MADLWD)-certified Asbestos Inspector to conduct all sampling of suspect asbestos-containing materials prior to disturbance of the material to determine whether or not Item 182.21 Asbestos Abatement is required. Should the asbestos inspector determine laboratory testing is required, a state certified, American Industrial Hygiene Association and National Voluntary Laboratory Analytical Program accredited laboratory shall be used to perform all necessary analysis. All analysis of asbestos bulk samples shall be performed using Polarized Light Microscopy (PLM) with dispersion staining in accordance with EPA Interim Method for the Determination of Asbestos In Bulk Insulation Samples (Title 40 CFR, EPA Method 600/R093/116, July 1993).

Dust suppression in the form of light water sprays with a surfactant will be implemented as required to control dust during any disturbance of asbestos suspected material during sampling. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the Health and Safety Plan (HASP) may pose a safety hazard to the workers.

REGULATIONS

- United States Department of Labor, Occupational Safety and Health Administration (OSHA) including but not limited to:
 - 29 CFR 1910 Section 1001 and 29 CFR 1926 Section 1101, Asbestos
 - 29 CFR 1910 Section 134 Respiratory Protection
 - 29 CFR 1926 Construction Industry Standards
 - 29 CFR 1910 Section 2 Access to Employee Exposure and Medical Records
 - 29 CFR 1910 Section 1200 Hazard Communication
 - 29 CFR 1910 Section 145 Specifications for Accident Prevention Signs and Tags
- United States Environmental Protection Agency (EPA) including but not limited to:
 - 40 CFR 762, CPTS 62044, FRL 2843-9 Federal Register Vol. 50 NO. 134, July 12, 1985 p.28530-28540 Asbestos Abatement Projects Rule
 - 40 CFR 763, Worker Protection Rule
 - 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA)
 - 40 CFR 61 Subpart A Regulation for Asbestos
 - 40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos
- United States Department of Transportation 49 CFR 172 and 173

- Massachusetts Department of Labor and Workforce Development Regulations (MADLWD) including but not limited to:
 - 453 CMR 6.00 Removal, Containment and Encapsulation of Asbestos
- Massachusetts Department of Environmental Protection (DEP) including but not limited to:
 - 310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10 Noise, Section 7.15 Air Pollution Control Regulations
 - 310 CMR 18.00 and 19.00 Solid Waste Regulations
- Massachusetts Division of Industrial Safety 45 CMR 10.00

Local requirements including but not limited to those of Health Departments, Fire Departments and Inspectional Services Departments.

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

BASIS OF PAYMENT

The costs of materials, tools, equipment and labor is to be paid for by the lump sum for the complete inspection and testing of the asbestos suspected materials.

Inspection and Testing for Asbestos will be paid for at the Contract lump sum price, which price shall include all labor, material, equipment, inspecting, testing, protection of public and incidental costs required to complete the work.

Payment will be at the contract unit price per Lump Sum as specified above including all materials, tools, equipment and labor to complete the inspecting and testing of the asbestos suspected material

All costs in connection with the protection of general public, private property, and all costs associated with the proper inspecting and testing of the material shall be included in the price and no additional compensation will be allowed.

ITEM 182.21

ASBESTOS ABATEMENT

LUMP SUM

The work shall include the removal and satisfactory disposal of existing asbestos, which may include (but not be limited to) asbestos-containing materials found in buried debris on-site as well as asbestos-containing conduits/utilities. The Contractor's attention is directed to the fact that existing asbestos shall be inspected and tested prior to removal, to determine if special removal and disposal is required. The Contractor shall also refer to the previous testing report prepared by Ransom Consulting in March 2021 for testing already conducted within the work limits and shall supplement this testing if necessary. The Contractor shall follow all the rules and regulations stated in "ITEM 182.1 INSPECTION AND TESTING FOR ASBESTOS". If asbestos is present, the

Contractor shall follow all the rules and regulations stated in the section "REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS", under this item. The Contractor should notify and coordinate his/her efforts with the proper utility accordingly.

REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

This section specifies the requirements for the handling and removal of asbestos containing material. The Contractor must perform all asbestos handling and removal work in accordance with these specifications and the following additional requirements.

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including but not limited to:

- 29 CFR 1910 Section 1001 and 29 CFR 1926 Section 58 Occupational exposure to Asbestos, Tremolite, Anthophyllite and Actinolite, Final Rule
- 29 CFR 1910 Section 134 Respiration Protection
- 29 CFR 1926 Construction Industry
- 29 CFR 1910 Section 2 Access to Employee Exposure and Medical Records
- 29 CFR 1910 Section 1200 Hazard Communication
- 29 CFR 1910 Section 145 Specifications for Accident Prevention Signs and Tags

U.S. Environmental Protection Agency, (EPA) including but not limited to:

- 40 CFR 762, CPTS 62044, FRL 2843-9, Federal Register Vol. 50 no.134, July 12, 1985 p.28530 - 28540 Asbestos Abatement Projects Rule
- 40 CFR 61 Subpart A Regulation for Asbestos
- 40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos

U.S. Department of Transportation 49 CFR 172 and 173

Massachusetts Department of Labor and Industries Regulations, (DLI) including but not limited to:

- 453 CMR 6.00 Removal, Containment and Encapsulation of Asbestos

Massachusetts Department of Environmental Protection (DEP) including but not limited to (supplementing subsection 7.01):

- 310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10 Noise, Section 7.15 Air Pollution Control Regulations
- 310 CMR 18.00 and 19.00 Solid Waste Regulations

Massachusetts Division of Industrial Safety 45 CMR 10.00

Local Requirements including but not limited to those of Health Departments, Fire Departments and Inspection Services Departments

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

All asbestos material shall be removed and properly disposed of by a contractor or subcontractor with a current Massachusetts Abatement Contractors License issued by the Department of Labor and Industries. Work shall be supervised by a competent person as required by OSHA in 29 CFR 1926 to ensure regulatory compliance. This person must have completed a course at an EPA Training Center or equivalent course in asbestos abatement procedures, have had a minimum of four years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. This person must also be certified by the Commonwealth as an Asbestos Abatement Supervisor and Asbestos Abatement Project Designer as required by 453 CMR 6.00.

Asbestos removal work shall be coordinated with all other work under the contract and shall be completed prior to performing any activities which could disturb the asbestos material or produce airborne asbestos fibers.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium chloride will be implemented as required to control dusting during trenching and excavation. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the HASP may pose a safety hazard to the workers.

Large metal canisters are sometimes used for asbestos waste disposal. These must be completely enclosed and have doors that can be closed and locked to prevent vandalism or other disturbances of the asbestos and wind dispersion of asbestos fibers. Uncontainerized material shall not be placed in these canisters, nor shall these canisters be used for non-asbestos waste. Bags shall be placed, not thrown, into these canisters to avoid splitting. These canisters must have warning signs conforming to OSHA 29 CFR 1926.1101(k) posted at all potential entry points.

Trucks, canisters and/or other transport equipment shall be properly placarded according to the DOT; warning tapes shall be placed obviously around transport vehicles per EPA 40 CFR Part 61 prior to loading or unloading asbestos contaminated waste.

NOTIFICATIONS AND PERMITS

A Non-Traditional Asbestos Abatement Work Plan (NTAWP) may be required to complete the work and shall be prepared by the contractor and transmitted to MassDEP using the prescribed form (AQ 36: Non-Traditional Work Practice Approval) at least 30 days prior to the start of asbestos removal work. The Contractor shall prepare a formal pre-notification form (i.e. AQ 04, ANF-001) at least ten (10) days prior to the start of asbestos removal work. These forms/applications must be submitted to the appropriate Regional Office of the Massachusetts Department of Environmental Protection and to the U.S. Environmental Protection Agency Region I Air and Hazardous Material Division. A copy of the submitted forms must be provided to the Engineer and kept at the work site.

Prior to starting any work, the Contractor shall also obtain any required asbestos removal permit(s) from the city/town. A copy of the permit(s) must be provided to the Engineer and posted at the

work site.

The Contractor shall also obtain and pay all other applicable asbestos waste transportation and disposal permits, licenses and fees.

STANDARD OPERATING PROCEDURES

The standard operating procedure shall ensure the following:

1. Proper site security including posting of warning signs and restricting access to prevent unauthorized entry into the work spaces.
2. Proper protective clothing and respiratory protection prior to entering the work spaces.
3. Safe work practices including provisions for communications; exclusion of eating, drinking, smoking, or use of procedures or equipment that would in any way reduce the effectiveness of respiratory protection or other engineering controls.
4. Proper exit practices from the work space through the showering and decontamination facilities.
5. Removing asbestos containing material in ways that minimize release of fibers.
6. Packing, labeling, loading, transporting and disposing of contaminated material in a way that minimizes or prevents exposure and contamination.
7. Emergency evacuation of personnel, for medical or safety (fire and smoke) so that exposure will be minimized.
8. Safety from accidents in the work space, especially from electrical shocks, slippery surfaces and entanglements in loose hoses and equipment.
9. Provisions for effective supervision and OSHA - specified personnel air monitoring for exposure during work.

REQUIRED SUBMITTALS

The Contractor shall submit to the Engineer the following listed items at least ten (10) calendar days prior to the start of asbestos work. No asbestos removal work activities shall commence until these items are reviewed by the Engineer, unless otherwise waived. Submittals shall be clearly labeled and in sufficient detail to enable the Engineer to form an opinion as to its conformity to the specifications.

1. Name, experience and DLI certification of proposed Supervisors and Foreman responsible for asbestos work, Also, Contractor's Industrial Hygiene MDLWD

Consultant's license and consultant's laboratory license to analyze asbestos air samples. The Contractor shall be responsible for all clearance air monitoring and project monitoring.

2. Summary of workforce by disciplines and a notarized statement documenting that all proposed workers, by name, have received all required medical exams and have been properly trained and certified for asbestos removal work, respirator use and appropriate Massachusetts DLI, EPA and OSHA standards. Include chain of command of responsibility at Work Site, including supervisors, foremen, and competent person, and their names, resumes, and certificates of training.
3. Notarized statement that workers are physically fit and able to wear and use the type of respiratory protection proposed for the project. Notarized certification signed by an officer of the abatement contracting firm that exposure measurements, medical surveillance and worker training records are being kept in conformance with 29 CFR 1926.
4. Written plan of action and standard operating procedures to include: location and layout of decontamination areas; sequencing of asbestos work; detailed schedule of work activities by date and interface with other project activities which affect work performance; methods used to assure safety and security; worker protection and exposure monitoring; contingency and emergency evacuation procedures; detailed description of methods to be employed to control pollution; waste handling procedures. The plan must also include a list of all equipment to be used on-site, by make and model, including negative air pressure equipment, HEPA filter-equipped vacuums, water atomizing devices, waste removal equipment and vehicles to be used.
5. Written respiratory protection program specifying level of protection intended for each operation required by the project and details of daily inspection and maintenance elements.
6. Copies of all notifications to federal, state and local government agencies, permits, applications, licenses, and like documents required by federal, state, or local regulations obtained or submitted in proper fashion to perform the work required by these Specifications. Copies of the asbestos notification to MassDEP must be provided one week in advance of submittal to MassDEP for Engineer review.
7. Name, location and applicable approval certificates for primary and secondary landfill for disposal of asbestos-containing or asbestos contaminated waste. Name, address and license number(s) of hauler permitted to transport waste. (Submit copies of completed manifests upon disposal).
8. Waste Shipment Record (WSR) must be provided and shall be used to document asbestos-containing wastes removed from the Site, in accordance with EPA regulation Title 40 CFR Part 61.149. The WSR shall include the name and address

of the facility at which the waste is; the Owner's name, address and phone number; names, addresses and phone numbers of Contractor; waste transporter(s); and authorized disposal site. Contractor, transporter and disposal site operator must all sign and date the WSR as responsibility for material changes hands. In addition, the WSR must include the type of asbestos waste materials generated, the number and type of waste containers used, and the quantity of each type of waste in cubic yards.

The Contractor must provide copies of daily inspection and record logs upon request of the Engineer, at any time during project. This information will include but is not limited to work area entry data, respirator inspections and maintenance, HEPA-exhaust inspections and maintenance and other work applicable activities or reports of accidents or unusual events.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

ITEM 182.21 Asbestos Abatement will be measured as a unit complete in place and will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, and incidental costs necessary to complete the work.

All costs in connection with the protection of the general public, private property and all costs associated with the proper disposal of the material removed shall be included in the price and no additional compensation will be allowed.

ITEM 222.3 FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD EACH

The work under these items shall conform to the relevant provisions of Section 201 of the Standard Specifications and the following:

DESCRIPTION

This work shall consist of installing new frame and grate (or cover) at locations as shown on the plans or required by the Engineer. New frame and grates or covers shall be manufactured by East Jordan Iron Works EJIW), 301 Spring Street, P.O. Box 439, East Jordan, MI 49727 (Phone 231-536-2261) or approved equal.

MATERIALS

All frames for covers or grates shall be cast iron and 8-inches deep. New Drain Manhole Covers shall have the word 'DRAIN' in 2-inch, flat face, gothic letters, cast into the cover

New Catch Basin Grates shall be either cascade left or right as required by the Engineer and have the words 'DUMP NO WASTE' in 1/2-inch, letters, engraved into the edge of grate along one side

CONSTRUCTION METHODS

Existing and new castings shall be set, as required by the Engineer, so that final grade of the manhole cover or catch basin grate is flush with the final course of hot mix asphalt pavement. Material around the structure shall be compacted and high early strength concrete collars shall be placed around the castings. High early strength concrete shall be 4000 PSI, 1.5 In., 565 Cement Concrete.

COMPENSATION

Method of Measurement

Item 222.3 Frame and Grate (Or Cover) Municipal Standard will be measured per each frame and grate or frame and cover installed on the plans or as required by the Engineer.

Method of Payment

Item 222.3 Frame and Grate (Or Cover) Municipal Standard and will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

<u>ITEM 370.1</u>	<u>8X6 INCH TAPPING SLEEVE, VALVE AND BOX</u>	<u>EACH</u>
<u>ITEM 376.</u>	<u>HYDRANT</u>	<u>EACH</u>

The work under these items shall conform to the relevant provisions of Section 300 of the Standard Specifications and the following:

DESCRIPTION

The work shall include the furnishing and installation of all materials required to install a new hydrant where shown on the plans or as required by the Engineer. The work shall also include the capping the end of existing iron pipe once the existing hydrant and connection pipe from valve (to remain) is removed.

MATERIALS

Approval of Materials

The Contractor shall submit the names of the material suppliers to the Engineer for approval prior to ordering any materials.

Pipe and Fittings

Pipe shall be ductile iron, Class 52, conforming to ANSI A21.50 and ANSI A21.51.

Fittings shall be ductile iron, Class 250 minimum, conforming to applicable ANSI, NEWWA, and AWWA specifications.

Pipe and fittings shall have a cement mortar lining and bituminous seal coat on the inside and a coal tar enamel coat on the outside in accordance with ANSI A21.4 (AWWA C104) and ANSI A21.6 (AWWA C106), as amended, except that the cement mortar lining shall be 1/8-inch in thickness for pipe 2 inches to 12 inches in diameter.

Pipe shall be either the rubber-ring type push-on joint pipe.

Rubber gaskets for push-on joints shall conform to ANSI A21.11.

Pipe shall be supplied in lengths not exceeding 20 feet. Each pipe and fitting shall have the initials of the manufacturer's name and the year cast stamped or cast into the metal.

Hydrant

Hydrant shall be Mueller "Centurion", Model A-423 (with or without their AquaGrip System) as manufactured by Mueller Co. or approved equal. The hydrant shall conform to the "Standard" Specifications for Fire Hydrants for Ordinary Water Works Service," AWWA C502 and the following:

Hydrant shall be according to manufacturer's standard pattern of standard size and shall have one 4-1/2-inch pumper nozzle and two 2-1/2-inch hose nozzles.

Hydrant inlet connections shall have mechanical joints for 6-inch ductile iron pipes.

Hydrant valve opening shall have an area at least equal to the area of a 5-1/4-inch diameter circle and be obstructed only by the valve rod. Each hydrant shall be able to deliver 500 gallons per minute through its two 2-1/2-inch hose nozzles when opened together with a loss of not more than 2 psi in the hydrant.

Each hydrant shall be designed for installation in a trench that will provide 5 feet of cover. Hydrant extension shall be as manufactured by the company furnishing the hydrants and of a style appropriate for the hydrants as furnished.

Hydrant shall be hydrostatically tested as specified in AWWA C502.

All nozzle threads shall be American National Standard.

Hydrant operating nut shall be AWWA Standard pentagonal type measuring 2-1/2 inches point to flat.

Hydrant shall be equipped with "O" ring packing.

Each nozzle cap shall be provided with a Buna N rubber washer.

Hydrants shall be so arranged that the direction of outlets may be turned 90 degrees without interference with the drip mechanism and without the mechanism obstructing the discharge from any outlet.

A bronze or rustproof steel nut and check nut shall be provided to hold the main hydrant valve on its stem.

Hydrant shall open by turning an operating nut to left (counterclockwise) and must be marked with an arrow and word "OPEN" to indicate the direction to turn stem to open hydrant.

All iron work to be set below ground shall be thoroughly cleaned and painted with two coats of asphalt varnish specified in AWWA C502, and iron work to be exposed above ground shall be shop painted with two coats of paint of quality and color conforming to the present City standard.

Each hydrant shall be designed such that the hydrant valve closes with line pressure preventing loss of water and consequent flooding in the event of traffic damage.

Each hydrant shall be furnished with a steel chair holder, double steel hose cap chain, steel pumper cap chair and any other hooks or appurtenances required for proper use.

Hydrant shall be thoroughly cleaned and given two shop or field coats of paint in accordance with AWWA C502 and the instructions of the paint manufacturer. Paint color shall be the standard hydrant color of the City as follows:

1. Barrel – OSHA Black
2. Bonnet – Reflective Silver
3. Nozzle Caps – OSHA Silver

If the hydrants are delivered with the Owner's standard color, they shall be given one matching field coat of an alkyd gloss enamel. If the hydrants are not delivered with the Owner's standard color, they shall be given two coats of an alkyd gloss enamel, colors as indicated herein.

Hydrant paint shall be manufactured by Sherwin-Williams, Cleveland, OH; Tnemec Company, Inc., Kansas City, MO; or Minnesota Mining and Manufacturing Co. (3M), St. Paul, MN; or approved equal.

Alkyd gloss enamel shall be 801 DTM by Sherwin-Williams, 2H-Tnemec by Tnemec; or approved equal. Reflective paint shall be Scotchlite #7211 by 3M.

Tapping Sleeve and Valve

Tapping sleeve and valve shall consist of a split cast iron or ductile iron sleeve tee with mechanical joint ends on the main and a flange on the branch. Tapping-type gate valves shall have one flange and one mechanical joint end. The valves shall conform to the requirements hereinbefore specified for gate valves and shall be furnished with a 2-inch square operating nut. The Contractor shall be responsible for verifying the outside diameter of the pipe to be tapped.

Oversized valves shall be provided as required to permit the use of full size cutters. Before backfilling, all exposed portions of bolts used to hold the two halves of the sleeve together shall be heavily coated with two coats of bituminous paint comparable to Inertol No. 66, Special Heavy. Sleeves shall be of cast iron furnished with rubber gaskets. Gaskets shall cover the entire area of flange surfaces.

Tapping sleeves and valves shall be as manufactured by Clow Valve Co., Oskaloosa, IA; Mueller Co., Decatur, IL; American Valve and Hydrant, Birmingham, AL; MH Valve, Anniston, AL; Kennedy Valve, Elmira, NY; US Pipe, Chattanooga, TN; or approved equal.

CONSTRUCTION METHODS

Pipe Installation

The Contractor shall make all necessary arrangements with the City Water and Fire Department for the necessary shutdown or bypass of service.

The City Water Department may establish the time of shutdown to be within the normal daily low demand period.

Care shall be taken in loading, transporting, and unloading to prevent injury to the pipes or coatings. Pipe and fittings shall not be dropped. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective. Any damage to the pipe coatings shall be repaired as directed by the Engineer. Any pipe found to be defective, before or after laying, shall be satisfactorily removed and replaced with sound pipe at no additional cost to the Owner.

All pipe and fittings shall be installed in conformance with AWWA Standard Specifications C600, except as otherwise provided herein. All pipe and fittings shall be sound and clean before laying and shall be laid on a shaped bedding providing uniform, firm support over the entire length of each section barrel. **BLOCKING WILL NOT BE PERMITTED.** The select bedding material shall be placed and tamped along the sides of the pipe to complete the bedding.

Pipe shall be laid with good alignment and at a uniform 5-foot depth to top of pipe below proposed grade except where extra depth is required to clear other utilities and to connect to existing pipes, valves or fittings. Joint deflection shall not exceed that recommended by the manufacturer. Additional fittings shall be furnished and installed as required to cross existing utilities. Solid sleeves shall be used only where approved by the Engineer.

When pipe laying is stopped for any length of time, including short periods, the open ends of the pipe and fittings shall be closed with a watertight plug or cap.

Necessary pipe cutting shall be accomplished by power saw and shall leave a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a push-on bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be undamaged.

Push-on joints shall be made in strict accordance with the manufacturer's instructions. The rubber gasket shall be inserted in the groove of the bell end of the pipe, the joint surfaces cleaned and lubricated. The plain end of the pipe to be entered shall then be inserted in alignment with the bell of the pipe to which it is to be joined and pushed home with a jack or by other means. After jointing the pipe, a metal feeler shall be used to make certain that the rubber gasket is correctly located.

Hydrant

Hydrant shall be set at the locations shown on the drawings, or as required by the Engineer, and bedded on a firm foundation. A drainage pit 2 feet 6 inches in diameter shall be filled with 3/4-inch crushed stone and satisfactorily compacted. Additional stone shall be brought up and around 6 inches over the drain ports. Each hydrant shall be set in true vertical alignment and properly braced. A concrete thrust block shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Felt roofing paper shall be placed around hydrant elbow before placing concrete. Care shall be taken to ensure that concrete does not plug the drain ports. Hydrant paint shall be touched up as required after installation.

Concrete Thrust Block

Concrete thrust blocks shall be installed at all tees, bends, plugs, caps, tapping sleeves and other locations as directed by the Engineer.

The back of thrust blocks shall be placed against undisturbed earth and the sides shall be formed. Felt roofing paper shall be placed to protect pipe joints. Concrete shall not be placed over bolts or nuts, or in a manner, which prevents the removal of joints.

Concrete shall be Class C (3,000 psi, 1-1/2 in., 470 lb.) or better.

Concrete shall be considered incidental to the item.

Use of precast concrete blocks will not be allowed.

Testing

The Contractor shall provide all necessary equipment and conduct hydrostatic pressure and leakage tests on the new water system installed under the Contract in conformance with AWWA 600, the regulations of the Massachusetts State Board of Health and the following:

The water system shall be subjected to a hydrostatic pressure of 200 psi and this pressure shall be maintained for at least one hour. The leakage test shall be conducted at a pressure of 150 psi and this pressure shall be maintained for at least two hours.

Permitted leakage shall conform to AWWA C600. Leaks exceeding this standard shall be located and all defective pipe, fittings, pipe joints, valves and other material removed and replaced with new material to correct the leak, as directed by the Engineer, at no additional cost to the Owner.

All testing shall be done in a manner, which prevents the entrance of contaminated water or pollutants into the existing water system.

Disinfection

After completion of testing, and any necessary leak repairs, the new water system shall be chlorinated in conformance with AWWA C601. The procedure and location of chlorination and sampling points shall be approved by the Engineer before beginning disinfection.

Immediately prior to disinfection, the system shall be flushed at the maximum velocity can be developed, but not less than 2.5 feet per second. All flushing shall be done in the presence of the Engineer and wastewater shall be directed into the drainage system.

Chlorine shall be introduced into the system in a dosage which provides a minimum concentration of 50 parts per million of available chlorine. The chlorine solution shall remain in the system for at least 24 hours and the residual chlorine concentration in any portion of the system after this period shall not be less than 25 parts per million.

During disinfection, all valves and hydrants shall be operated to ensure that all appurtenances are disinfected.

Following disinfection, the chlorine solution shall be flushed from the system and the system refilled. The Town will take samples and tests for bacteriologic quality and the absence of coliform organisms. The Contractor will be required to re-chlorinate, if necessary, and the lines shall not be placed in service until the requirements of the City and State Board of Health are met.

COMPENSATION

Item 370.1 and 376 will be measured for payment by the each, complete in place.

Item 370.1 and 376 will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for concrete thrust blocks, crushed stone bedding, backfill, insulation, testing and disinfection, but all costs in connection therewith shall be included in the unit price bid for the respective items.

No separate payment will be made for the removal, transporting and stacking of existing salvaged materials including existing ductile or cast-iron pipe or removed hydrant, but all costs in connection therewith shall be included in the unit prices bid for the respective items.

ITEM 590.

CURB REMOVED AND STACKED

FOOT

The work under this item shall conform to the relevant provisions of Section 501 of the Standard Specifications and the following:

DESCRIPTION

The work consists of removing and stacking existing sections of granite curb (straight or curved) not reused elsewhere along the project or as required by the Engineer.

CONSTRUCTION METHODS

All curb designated to be removed and stacked shall be removed, loaded, transported and carefully stacked at the City of Brockton's DPW yard located at 301 Oak Hill Way, Brockton, MA 02301. If the City determines that any part of the stacked materials is unsuitable for re-use, or if the City decides to abandon part or all of such materials, said materials shall become the property of the Contractor who will be responsible for the safe and legal disposal of said materials outside and away from the limits of the project, without additional compensation.

COMPENSATION

Item 590 will be measure for payment by the linear foot of curb removed from the project and stacked at the DPW yard.

Item 590 will be paid for at the Contract unit price per linear foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 697.1

SILT SACK

EACH

The work under this item shall conform to the relevant provisions of Section 670 of the Supplemental Specifications and the following:

DESCRIPTION

The Contractor will be required to furnish, install, maintain and remove (upon completion of project), a reusable fabric sack in each drainage structure for the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

MATERIALS

The silt sack shall be manufactured from a woven polypropylene fabric with an oil-absorbent pillow insert or made completely from an oil-absorbent fabric with a woven pillow insert that meets or exceeds the following specifications.

<u>PROPERTIES</u>	<u>TEST METHOD</u>	<u>UNITS</u>
Grab Tensile Strength	ASTM D-4632	265 LBS
Grab Tensile Elongation	ASTM D-4632	20%

Puncture	ASTM D-4833	135 LBS
Mullen Burst	ASTM D-3786	420 PS
Trapezoid Tear	ASTM D-4533	45 LBS
UV Resistance	ASTM D-4355	90%
Apparent Opening Size	ASTM D-4751	20 US SIEVE
Flow Rate	ASTM D-4491	200GAL/MIN/SQ FT
Permittivity	ASTM D-4491	1.5 SEC-1

CONSTRUCTION METHODS

Silt sacks shall be installed in each of the existing catch basins within the project limits and as required by the Engineer. The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions, and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as required by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course at which point all materials used for the silt sack including filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sack during major rain events and after each rainstorm. Silt sacks shall be cleaned periodically, and after the pavement milling has been completed, to remove and dispose of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the project.

When emptying the silt sack, the Contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction. All curb openings shall be blocked to prevent stormwater from bypassing the device.

Disposal of Accumulated Material

All material removed from the silt sacks shall be properly handled and disposed of by the Contractor in accordance with all Massachusetts Department of Environmental Protection (DEP) regulations, policies and guidelines.

Material removed shall be transported immediately to the place of disposal in machines or trucks that will not spill the material along the roadway. Any material falling on the roadway shall be removed at the Contractor's own expense.

NOTE: The Contractor should be aware that many landfills may require testing and analysis of the material prior to accepting it for disposal at the facility. The Contractor shall be aware that in the event that the test results indicate a hazardous waste that cannot be land filled. The

Contractor shall be responsible for all costs associated with adhering to special regulations regarding disposal of waste materials removed from silt sacks.

COMPENSATION

Item 697.1 Silt Sack will be measured for payment by the each, complete in place.

Item 697.1 Silt Sack will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to provide, install, maintain and remove silt sacks in locations required by the Engineer for the duration of the project.

ITEM 706.7 POROUS PAVEMENT SURFACE SQUARE YARD

The work under this item shall conform to the relevant provisions of the Standard Specifications and the following:

DESCRIPTION

The work consists of supplying and installing a flexible porous material within the defined tree pit areas as shown on the plans or as required by the Engineer.

MATERIALS

The flexible porous paving shall be made from natural or recycled products, crushed stone and a binding agent such as Flexi-Pave as supplied and installed by Northeast Porous Paving (Manufacturer), 105 Summit Terrace, Unit 35, South Portland, ME 04106 (Telephone 207.450.6228. Contact Steve Hides); Chameleon Ways, Inc., P.O. Box 387, Center Valley, PA 18034 (Telephone 877.426.5687 email info@chameleonways.com) or approved equal. All components, materials and compounds shall be 100% sources and manufactured in the USA.

Porous pavement shall be mixed with a binding agent free of extender oils to prevent leaching over time. Binders that use extender oils will not be acceptable.

Porous pavement shall be available in multiple colors including red that will match the proposed brick banding as close as possible. The City will determine the color prior to placing order for material.

Samples, Submittals and Field Mock-Up

The Contractor shall submit a representative sample to the Engineer that reflects the characteristics of the material to be installed. The sample, upon approval, shall be maintained as the standard of minimum quality for all the proposed surfacing and paving work required for the project.

CONSTRUCTION METHODS

Porous pavement material shall either be installed by the manufacturer or by the Contractor with direct supervision or instruction by the manufacturer as required by the Engineer. If installed by the manufacturer, they will be required to provide an adequate number of skilled workers who are trained and experienced with installing the product. The material will be installed to the depth and area as shown on the plans or as required by the Engineer.

The Contractor will reduce the risk of damage to the flexible porous paving surface by not allowing track vehicles (metal or rubber), forklifts (warehouse-variable reach), main lifts (booms or scissors), and/or dumpsters or roll-off containers on the material either during or following installation.

The Contractor will provide necessary devices such as cones, barricades, tape, etc. in order to secure the area from equipment and prevent damage to the surface during the curing process.

The porous paver surface shall be cured and ready for foot traffic within 24 hours of installation.

The Contractor shall provide appropriate and adequate protection to adjacent areas including but not limited to protection of adjacent work space from splashing of flexible porous paving materials; remove all stains from exposed surfaces of paving structures and grounds; removal of waste and spillage; provide suitable protection to assure no damage or disturbance to existing improvements or vegetation before starting work and maintain protection throughout the project; restore and repair areas that have been damaged as a result of construction work including existing paving on or adjacent to the site, to their original condition at no additional cost to the project.

The porous paver material shall not be installed when the ambient air temperature in the shade near the installation site is above 110 degrees Fahrenheit or below 50 degrees Fahrenheit. Temperatures below 50 degrees Fahrenheit can extend the curing time and would fall outside of normal "use ready in 24 hours" guidelines.

The binding agent shall be stored on site at between 59-77 degrees Fahrenheit and used within 6 months of delivery.

The porous paver material shall not be applied on days when rain is in the forecast, unless a change in the weather results in favorable paving conditions as determined by the Engineer. In the event of rain on days prior to installation, the sub-base must be dry and not contain any standing or moving water.

The porous paver material shall have a material warranty of 12 months from the date of installation.

COMPENSATION

Item 706.7 Porous Pavement Surface will be measured for payment by the square yard, complete in place.

Item 706.7 Porous Pavement Surface will be paid for at the Contract unit price bid per square yard, which price shall include all labor, material, equipment and incidental costs required to install a

porous surface as shown on the plans, described herein and as required by the Engineer. The use of crushed stone will be incidental to this pay item.

ITEM 748.

MOBILIZATION

LUMP SUM

The work under this item shall conform to the applicable requirements of Section 748 of the Standard Specifications and the following:

DESCRIPTION

The work consists of preparatory work and operations including but not limited to those necessary for the movement of personnel, equipment, supplies and other incidental items to the project site or for costs which must be incurred prior to beginning the work.

COMPENSATION

Item 748 Mobilization will be paid as follows:

The first payment of one half of the lump sum price for Mobilization will be made after the required Traffic Management signs and/or controls have been installed at either end of the project, required shop drawings submitted, schedule submitted and all project abutters have been notified.

The second and remaining payment for Mobilization will be made upon 100% completion of the work.

ITEM 783.650 **ULMUS AMERICANA-‘PRINCETON’ 2.5-3 INCH CALIPER** **EACH**

The work under this item shall conform to the applicable requirements of Section 771, PLANTING TREES, SHRUBS AND GROUND COVER, of the Standard Specifications and the following:

This work shall consist of furnishing and planting trees at locations as shown on the plans and/or as required by the Engineer. The work shall include excavation of pits, placing of backfill mixture, mulching, watering, staking or guying, wrapping for transport, adding fertilizing and/or other soil amendments, seeding, weeding, watering, care of the trees, and replacement of unsatisfactory trees and materials during the duration of the contract. The Contractor performing work under this Section shall have five years continuous experience and expertise in management, handling and installation of trees in large-scale landscape construction projects. Site foreman shall have at least five years of experience, able to read and interpret plans, and shall be on-site during all times of plant installation.

MATERIALS

Materials shall meet the requirements specified in the following Subsections of Division III, Materials with the amendments and supplements contained herein:

Loam Borrow.....	M1.05.0
Organic Soil Additives.....	M1.06.0
Inorganic Amendments.....	M6.01.0
Fertilizer	M6.02.0
Wood Chip Mulch.....	M6.04.3
Aged Pine Bark Mulch.....	M6.04.5
General Planting.....	M6.06.0
Nursery Stock - General.....	M6.06.1
Wrapping for Transport	M6.07.1
Materials for Guying and Staking.....	M6.08.0
Water for Irrigation	M6.09.0

The Contractor shall furnish written certificates of compliance, including nursery shipping lists, in triplicate for each load of plant material showing where the plants were grown and listing all transplanting, age or size as specified, grade and quantity. All plants shall be tagged with botanical name, including cultivar, and size so that proper identification can be made.

All plants shall be northern grown nursery stock. Botanical and common names shall conform to the current edition of Hortus Third, compiled by the staff of L. H. Bailey Hortorium, Cornell University. The latest edition of the American Standard for Nursery Stock (ASNS) published by the American Association of Nurserymen, Inc. shall be the Department's standard for plants and for plant, root ball, and container size, as well as growth and form requirements. The term "plant" shall refer to any tree, shrub, herbaceous perennial, seedling, vine or groundcover.

The following standards shall apply to the work of this Section.

Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada.
L.H. Bailey Hortorium. 1976.

American Standard for Nursery Stock (ASNS), ANSI Z-60.1, latest edition, published by American Association of Nurserymen (AAN).

Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses. Michael Dirr, Stipes Publishing Company, latest edition.

ANSI A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance, Part 1: Pruning, available from Tree Care Industry Association and International Society of Arboriculture.

Examination of Conditions

The Contractor shall be responsible for judging the full extent of work requirements involved. This responsibility includes, but is not limited to, the following: transportation, purchase, temporary storage and maintenance of plants; plant re-handling prior to final installation; removal and off-site disposal of existing loam that has been determined unacceptable; purchase, transport, and supply of loam as required for backfill mixing operations.

Samples and Submittals

The Contractor shall keep the Engineer apprised of the sources and availability of plant material in the Contract. The Contractor shall provide nursery supplier lists indicating current and projected

availability of all plant material for the project no later than the pre-construction meeting. All the material shall match species, cultivar, sizes and quantities specified in the Contract.

By the pre-construction meeting, the Contractor shall submit to the Engineer for approval a watering schedule for all planting in the project. Watering schedule shall include all methods for providing water to plants.

Concurrently, the Contractor shall submit a confirmation of availability for all plants on the list, accompanied by nursery sources. When the specified types and sizes of plants are not available, the Contractor may submit written recommendations for substitutions for approval by the Engineer. Substitutions proposed by the Contractor shall have equivalent overall form, height, and horticultural characteristics and must be approved in writing by the Engineer prior to tagging.

For materials other than plants, by the pre-construction meeting, the Contractor shall submit material specifications and (where applicable) installation instructions attesting that the materials meet the requirements specified. No materials shall be ordered until submittals have been approved by the Engineer. Delivered materials shall match the samples. All material samples shall include supplier's literature and certification stating that material meets specifications.

The Contractor shall submit for approval equipment and methods for testing soil moisture and soil pH. The Contractor shall provide two moisture gauges, including instructions for use and batteries if required, for his use during the duration of the Contract. The meters shall be hand held and shall be capable of measuring moisture at a depth of 6 inches. Meter scale shall be sufficient to determine moist, dry, or wet soil. The meters shall be regularly checked for calibration against watered loam, and shall be replaced if found faulty at no additional cost.

In addition, the Contractor shall provide to the Engineer one copy of the "American Standard for Nursery Stock," ANSI Z-60.1, latest edition, published by American Association of Nurserymen (AAN) for the duration of this Contract.

For work requiring an arborist, the Contractor will provide certification of Massachusetts Certified Arborist.

At the pre-construction meeting, the Contractor shall submit a schedule for tagging material to the Engineer.

Materials may be temporarily stored onsite as required by the Engineer. Heavy equipment and fill material shall be stored outside of the drip line of existing tree canopy. If materials are stored onsite, the Contractor shall restore the storage area to its original natural condition at their expense, including tilling of compacted soils and reseeding.

Arrangements shall be made, to the extent that it is practicable, to have plants delivered as the pits or beds are made ready for them. Delivery of plants shall be made to the site, only according to the Contractor's ability to handle and properly care for them. Whenever plants cannot be planted on the day of arrival, all those with bare roots shall be "heeled-in" in moist soil or mulch. The Contractor shall properly maintain all "heeled-in" plants until they are planted. In the event that "heeled-in"

plant material must be held over until the next planting season such material shall be lifted and replanted in a satisfactory manner in nursery rows as directed by the Engineer, and shall be suitable for transplanting the following season. The root balls of B&B plants not planted immediately after delivery and inspection shall be covered with loam, mulch or wood chips and irrigated until planted. Throughout the work, care shall be taken to keep the roots of all plants from drying out, to preserve the solidity of the balls of B&B plants, and to prevent plants from being broken, scarred or damaged in any way. All emergency storage of materials shall be at the risk of the Contractor. For B&B and container shrubs, a representative sample, up to three, shrubs of each species shall be washed of soil media for inspection of Engineer to confirm root conditions. If accepted, the sample plants shall be planted immediately and shall be subject to all planting performance guarantees.

Backfill Mixture for Plant Material

The Contractor shall provide testing of soils in planting locations. The Contractor shall provide test results and recommendations as necessary for soil amendment to the Engineer for his approval. Backfill shall be either a blend of one part loam borrow, one part organic material and two parts existing subsoil, or structural soil as specified.

CONSTRUCTION METHODS

Furnishing and planting of plant material shall include, but is not limited to, the following: digging of the pits and plant beds; amendment of loam as required to produce planting soil mix; provision of soil additives for pH requirements of specific plants; provision of additional amendments as required, including soil wetting agents; furnishing the plants as specified; plant installation; watering and maintenance, including weeding.

Seasons for Planting. The purpose of the planting dates is to establish an appropriate period of time for planting. The Contractor may submit request for planting outside the scheduled timeframes in writing to the Engineer for approval. Calendar guidance for planting is as follows:

Spring: Deciduous materials - March 21 through May 15
 Evergreen materials - April 15 through June 1

If required,

Fall: Deciduous materials - Oct. 1 through Dec. 1
 Evergreen materials - Aug. 15 through October 15

It is anticipated all plantings for this project will be installed by June 30, 2021. Spring planting for bare root material shall be after the ground has thawed, but before leafing out, approximately mid-March to early April. Fall planting for bare root plants may occur in late October, after leaf drop, through mid-November.

Plant Tagging and Approval

The Contractor shall locate and tag plants at least one month prior to the expected planting date. The Contractor shall be responsible for tagging the material at the nursery. The Contractor shall request that the Engineer provide a representative to approve tagged stock to be planted under this

Section. The Contractor shall be responsible for any expenses associated with any necessary travel and overnight accommodations for the Engineer's representative during the period of time required to locate, select, and approve plant material.

All representative samples of each shrub species on the Plant List shall be tagged by the Contractor at the nursery and approved by the Engineer or his representative, prior to digging, for conformity to specification requirements as to quality, size, and variety. All plants will have labels that list the common name, botanical name, and size.

Approval of tagged material at the nursery shall not prevent the right of inspection and rejection upon delivery at the site or during the progress of the work. Cost of replacement of materials rejected by the Engineer at the site shall be borne by the Contractor.

Plant Delivery and Planting Preparation

Plants shall either be shipped in enclosed trucks or all surfaces, leaves and branches shall be wrapped to prevent damage and desiccation. Damaged plants may be rejected by the Engineer at any time. Locations for all plants shall be approved by the Engineer before any plant pits or plant beds are dug. The Contractor shall locate all underground utilities within 10 feet of the proposed planting pits and notify the Engineer of any conflicts prior to digging plant pits. Stake all shrub and perennial beds, for Engineer approval prior to digging. Contact DIGSAFE and other utilities if coordination has not already occurred for other phases of project. Prior to the installation of any plant material, the Contractor shall dig test pits and determine percolation rates. Percolation of less than 1 inch per hour shall require corrective measures as recommended by the Contractor and approved by the Engineer. The Contractor shall notify the Engineer 5 working days prior to the proposed arrival of plant material on the site. All plants shall be planted within 5 days of arrival on site or shall be rejected by the Engineer. Plants stored on site shall be shaded from direct sunlight at all times and shall not be stored on paved surfaces. Plants stored on site shall be watered daily.

Planting

Pits excavated for plants shall be as shown on the plans. In general, pits shall be 3 times the width of the rootball or plant container. Depth of the pits shall correspond to the height of the rootball, measured from the bottom to the lower extent of the root flare, ensuring that the root flare will not be covered. The sides and bottom of pit shall be scarified to prevent glazed soils.

Plant material installed in infertile or manufactured soils shall have soil modification agents added per manufacturer specifications. After planting, the Contractor shall certify that appropriate agents have been used and properly applied per the manufacturer's specifications. Written certification shall be provided to the Engineer.

For ball and burlap plants, remove all rope and wire baskets from the root balls. Burlap may be removed off the top and sides. Any excess burlap shall be cut away and disposed of off-site. For container grown plants, score or butterfly cut the rootball of all container-grown plants prior to planting. For peat or other similar degradable containers, remove any portion of the projecting above the level of the soil. All metal, plastic or other non-root-thru type container shall be completely removed during the process of planting.

Prepare planting soil mix as specified above to depths as shown on the drawings. Place backfill mix in layers of not more than 6 inches, and water each layer sufficiently to settle soil before the next layer is put in place.

Backfill mix shall meet finished grade after settlement. Shape edge of planting pit to form a saucer for holding water and place mulch as shown in the plans. On steep slopes, the mound around the saucer may be omitted on the uphill side. Do not cover the stem flare of the plants with mulch. Water plants immediately following planting as necessary to thoroughly moisten root ball and planting soil. The Contractor shall be responsible for furnishing his own supply of water to the site at no extra cost. The Contractor shall, at his own expense, replace any plants injured or damaged due to the lack of water, or due to the use of too much water, as determined by the Engineer. Plants shall not be wrapped after installation, except as discussed below. Wounds shall not be painted. Trees shall not be staked unless wind or other local conditions require the additional protection.

Once the root ball is placed in the pit and the container, wires and burlap removed, carefully rake the root ball to spread the roots and partially backfill the pit, ensuring that the soil filters in among the roots. The backfill shall be placed with care taken not to injure or bruise the roots.

Bare Root Planting

Bare root material shall be delivered to the site in a dormant condition. Evergreens will be rejected if the fine roots were lost in digging. All bare root plants shall be prepared with hydrogel at the nursery prior to planting. The backfill mixture of soil placed beneath the plant shall be firmed prior to setting the plant. Do not fertilize bare root plants.

Staking and Guying and Wrapping

The Contractor shall consult with the Engineer to determine whether wind exposure, potential vandalism, or other conditions warrant tree staking and guying. Evergreen trees up to 4 feet high and deciduous trees up to 6 feet in height shall be supported by one stake driven firmly 2-3 feet into the ground. The stake shall be located far enough from the tree to avoid damaging the roots and so that the top of the stake shall be about 2/3 the height of the tree. The point of attachment to the stake shall not be more than 2 feet from the trunk. Secure the tree to the stake with biodegradable cloth webbing. Do not use wire for staking any plant.

Evergreen trees taller than 4 feet and deciduous trees taller than 6 feet, if less than 3 inches in caliper, shall be supported with two stakes on opposite sides and driven into the ground at least 2 feet. The stake shall not be higher than 3/4 the height of the tree. Any excess burlap shall be cut away and disposed of as directed.

Trees greater than 3 inches in caliper shall be securely guyed by biodegradable fabric webbing, protective material and anchors. Three anchors shall be equally spaced around the tree. Webbing shall be fastened around the tree trunk immediately above a substantial limb located 1/2 to 2/3 of the tree height above the ground and anchored at a distance from the trunk equal to 2/3 of the height of attachment to the tree. The anchor shall be a hardwood stake. The anchor stake shall be firmly driven at an angle and to a depth of at least 2 feet and the excess length of stake shall be cut off 3 inches above the ground. Webbing shall be placed around the tree trunk and secured to the

anchor stake. Staking and guying shall be incidental to tree installation. Use cloth webbing rather than wire. Do not use hose.

All Flowering Cherries and Flowering Crabs shall be protected to a height of 12 to 18 inches above the ground from animals and rodents by a protective cage. The cage shall be of wire or plastic mesh or other approved material and shall not make any direct contact with the tree. Otherwise, do not wrap trees except for transport. Remove transport wrapping after installation of plant material.

Mulch

No mulch shall be applied prior to the first watering of the plant. Trees and shrubs shall be mulched no later than one week after planting. Mulch material shall be furnished and placed over all pit or saucer areas of individual trees and shrubs and over the entire area of shrub beds to the depth indicated on the plans. Pull mulch away from stem flare. In areas to be planted with roses, vines, or ground cover, the entire area shall be mulched before planting. The mulch shall be parted at the location of each hole and carefully replaced around the plant immediately after planting. Preparation for mulch areas of mass planting shall conform to the provisions of Subsection 767.60. Mulch material shall be material as indicated on the plans or approved by the Engineer. The Contractor shall, at his own expense, replace any plant material that has been damaged by too much or too little mulch, as determined by the Engineer.

Pruning

Pruning of all plants shall be done only by a Massachusetts Certified Arborist or Horticulturist, as follows: Initially, all broken or dead or injured branches shall be cut flush with the trunk or limb, and broken roots shall be pruned on the plant side of the break. If damage is significant, then plant will be replaced per direction of Engineer. Pruning shall not deform or otherwise destroy the typical shape or symmetry of the tree or shrub and shall not reduce the height or overall size by more than 1/3. The leader of the tree shall not be cut back.

Care and Maintenance During Maintenance and Establishment Periods

The Contractor will be held responsible for all planted material, providing plant care for the duration of the Maintenance and Establishment periods described below, until the project is completed and accepted. At the completion of the Establishment period, all plants shall be in a healthy, growing condition and free from weeds or other noxious materials or conditions. Care shall include watering, weeding, cultivating, pruning, re-mulching, trimming, adjusting of guys, removal of dead material, resetting plants to proper grades or upright position, and maintaining the planting saucer, and by performing other operations as required to keep plants healthy and growing. Pruning shall be in accordance with the ANSI standards for Class I, fine pruning, to preserve the natural character of the plant. All dead wood or suckers and all broken or badly bruised branches shall be removed. Do not cut leaders. The Engineer shall determine if plants require pruning, or should be rejected. All pruning work shall be done by a Massachusetts Certified Arborist. Contractor will submit a copy of the Arborist's current certification to the Engineer. The Contractor will be responsible for weeding around planted materials. All weeding shall be completed before acceptance of the project. At no time shall weeds attain the height of 6 inches during the period of contract prior to acceptance. Newly planted material must be clearly visible in order to be approved for Conditional and Final Acceptance. 771.71 Watering. All plants shall be watered during planting and all plants shall be watered at least twice each week during weeks where the average daily

temperature exceeds 55 degrees (F) and when precipitation is less than 1 inch, as determined by local National Weather Service data. Watering shall be sufficient to provide moist soil to a depth of 6 inches, as determined by the Engineer. If soil is sufficiently moist, as determined by the Engineer, the required watering may be reduced. Trees will require a minimum of 10 gallons of water each, and shrubs a minimum of 5 gallons per plant per watering. Watering may be achieved using individual drip irrigation bags. Trees or shrubs planted after October 15 shall be thoroughly watered at the time of planting, after which subsequent watering will not be required until following season. The Contractor shall maintain a watering log for all plants installed on the project, indicating dates of watering and weather events. Log shall be submitted for final payment.

Maintenance Period

The Maintenance Period shall begin immediately after all plants are planted and shall continue for a minimum of 60 days following the completion of all planting installations, or until the conditional acceptance of all planting work, whichever is a longer period of time. During the 60-day Maintenance Period, plants shall be inspected for watering, weeding, and other requirements at least twice each week. Any decline in the condition of new plantings shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall immediately notify the Engineer and engage professional arborists and/or horticulturists to inspect plant materials and to identify problems and recommend corrective procedures. Inspection and recommendation reports shall be submitted to the Engineer. At the end of the Maintenance Period, the Contractor will request inspection by the Engineer at least 10 days before the anticipated date of inspection. At the time of inspection, if the plant materials, workmanship, and maintenance practices are acceptable to the Engineer, the date of the inspection shall establish the end of the Maintenance Period and the commencement of the required one-year Establishment Period for planting work. If in the Engineer's opinion, plant materials, workmanship, or maintenance is deficient, acceptance will not be granted, and the Maintenance Period for all the plants shall be extended until plant replacements are made or other deficiencies are corrected. All dead, declining, or unsatisfactorily maintained plants shall be removed promptly from the project. Replacement plants shall conform in all respects to the Specifications for the original plants and shall be planted in the same manner. Absolutely no debris may be left on the site. The Contractor shall repair any damage to site as directed by the Engineer, at no additional cost.

Establishment Period

The purpose of the Establishment Period is to nurture plants through at least one full growing season and one full winter. Planted areas shall be free of weeds and debris, and plantings shall be re-mulched as necessary. The Contractor is responsible for arranging inspection early enough in the season to allow adequate time to procure and install replacement material. The Engineer will inspect the replacement planting work upon the request of the Contractor. Request for inspection, shall be received by the Engineer at least ten days before the anticipated date of inspection. At the end of the Establishment Period, each plant shall show healthy growth on at least 75 percent of its terminal stems, as determined by the Engineer. Determination of healthy growth shall include, but is not necessarily limited to, viable leaves (in season) and terminal buds, as well as live cambium. Plants found to be unacceptable shall be removed promptly from the site and replaced immediately or during the next normal planting season, as permitted by the specifications. Stakes and guying shall be removed from all plants before Final Acceptance, and materials will be disposed of off-site at no extra cost to the Contractor. 771.74 Replacement of Defective Plant Material. Any dead and

unsatisfactory plants shall be replaced in kind and size with plants as originally specified, or on approval by the Engineer in writing, by alternate or substitute varieties of plant material of equal value. Replacement plantings of evergreens shall be in place by October 15 and of deciduous by November 1. Replacement plantings shall conform to the provisions of this section, except the requirements for establishment. A final inspection of all plant material for acceptance will be held after the replacement planting has been completed.

COMPENSATION

Item 783.650 Ulmus Americana – ‘Princeton’ 2-2.5 Inch Caliper will be measured for payment by the each, complete in place.

Item 706.650 Ulmus Americana – ‘Princeton’ 2-2.5 Inch Caliper will be paid for at the Contract unit price bid per each, which price shall include all labor, material, equipment and incidental costs required to plant a new tree as shown on the plans, described herein and as required by the Engineer.

ITEM 804.3 3 INCH ELECTRICAL CONDUIT TYPE NM – PLASTIC – (UL) FEET

Work under this item shall conform to the relevant provisions of Section 800 of Standard Specification and the following:

DESCRIPTION

The work under this Item consists of furnishing and installing 3 Inch Non-Metallic conduit for lighting or communication systems as shown on the plans and as required by the Engineer. The work shall also include breaking into existing pull boxes where shown on the plans or as required by the Engineer.

MATERIALS

All conduit shall be Schedule 80 PVC.

CONSTRUCTION METHODS

Conduit in Grass or Planted Areas

Where new conduits are installed in grass or planted areas, work shall include placement of a minimum of 6 inches of loam borrow, seed, and any other materials replaced in kind to restore disturbed areas to their original condition. Any existing plants (i.e. bushes, flowers, etc.) removed or damaged as a result of this work shall be replaced in kind at no additional cost to the project.

Conduit under Sidewalk or Islands

Where conduit is installed in sidewalk or islands, the work shall include excavating and backfilling of trenches, including necessary compaction. The cost to saw cut pavement and sidewalk, and to repair and/or replace damaged sidewalk and pavement surfaces shall be incidental to this item.

Conduit Crossing Roadways (Areas of Overlay)

Trenches in existing asphalt pavement not slated for full-depth reconstruction shall be saw cut to an 18-inch width unless otherwise required by the Engineer. The existing pavement shall be saw cut through their full depth and the pavement removed or the entire width cold-planed using a milling machine as required by the Engineer. After conduit installation, the trench shall be backfilled according to the plans or as required by the Engineer. The controlled density fill shall be flush with the bottom of the pavement box. The cost to saw cut pavement shall be incidental to this item.

COMPENSATION

Item 804.3 3 Inch Electrical Conduit Type NM – Plastic – (UL) will be measured for payment per foot of conduit installed, complete in place.

Item 804.3 3 Inch Electrical Conduit Type NM – Plastic – (UL) will be paid for at the Contract unit price bid per foot, which price shall include all labor, material, equipment and incidental costs required to install electrical conduit as shown on the plans, described herein and as required by the Engineer.

Controlled Density Fill shall be incidental to this item.

ITEM 812.09

LIGHT STANDARD FOUNDATION PRECAST

EACH

Work under this item shall conform to the relevant provisions of Section 800 and the following:

The work shall consist of furnishing and installing precast or cast in-place light standard foundations at the locations shown on the plans or as required by the Engineer, complete in place.

MATERIALS

Concrete: Shall be MassDOT Mix Design 4000 PSI, 3/4 IN., 610 CEMENT CONCRETE

Rebar: Shall be Grade 60 per ASTM A615 Green Epoxy

CONSTRUCTION METHODS

All foundations shall be installed at the location as shown on the plan except as approved deviations are required to meet field conditions and as required by the Engineer.

All foundations will be set plumb and 2 inches above the surface of the sidewalk or landscaped area. All foundations shall be installed to a depth as shown on the plans and details and as required by the Engineer.

The Contractor shall carefully mark the proposed location of the foundations and then the contractor shall determine if any utilities or underground or overhead obstruction will prevent the installation at each location. Similar marking shall be done for the conduit runs to the foundation.

If no obstruction is apparent at the proposed foundation location the Contractor shall make an opening deep enough and wide enough to accommodate the foundation. No material from the excavations will be stockpiled on the sidewalks or the roadway for an extended period of time or overnight. The excavation material from any hydro-excavation shall be disposed of by the Contractor. Reuse of this material for backfill, after it has been stockpiled and dried, shall be as required by the Engineer.

If the Contractor encounters no difficulty in the excavation and the soil conditions are suitable to support the foundation, the Contractor shall install the foundations. The top of the foundation shall be level and installed as indicated in the plans. After the installation of the street light foundation, the Contractor shall cap the end of the exposed conduit.

On straight sections of curb, the bolts shall be parallel with the face of the curb. On curved sections, the bolts shall be adjusted to allow proper placement of the bracket and luminaire on the pole into the roadway when installed. Placement of the foundation predetermines the placement of the bracket arm, as only a minor adjustment of the pole on the foundation can be accomplished when the pole is installed. Junction Box covers shall be installed per manufacturer's direction or as required by the Engineer.

No materials shall be stored within sidewalk areas or roadway areas, including travel lanes, parking lanes and shoulders, without the permission of the City of Brockton and the Engineer.

COMPENSATION

Item 812.09, will be measured for payment per each, complete in place.

Item 812.09, will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for excavation (hand digging or hydro-excavation), back filling, controlled density fill, gravel borrow, concrete, steel reinforcement or the required conduit sweeps as shown on the plans and approved on the shop drawings. All costs in connection therewith shall be included in the Contract unit price bid.

ITEM 823.101 TYPE A ORNAMENTAL STREET LIGHT BASE, EACH **POST & LUMINAIRE**

The work under this item shall conform to the relevant provisions of the Standard Specifications and the following:

The work shall include the furnishing and installation of base, pole and luminaire, GFCI outlet, ornamental banner pole and hardware as shown on the plans or as required by the Engineer that will result in a complete operational light system.

Submittals

The Contractor shall submit five (5) copies of shop drawings, manufacturer's product data, and samples to the Engineer. The Contractor shall verify all applicable dimensions in the field before submitting shop drawings. The Contractor shall submit a sample of the product finish(s) and color for approval by the Engineer.

Shop drawings shall include plans, sections and details as required to show all materials and reinforcing, layout, dimensions, jointing, method of connection and assembly, fabrication and tolerances for types of materials, types and details of connections and openings, cuts, holes, bolts, plates, concrete footings, reinforcing and finishing, anchors and fasteners, attachment details, and painting and finishing.

The Contractor shall submit a Certificate of Compliance from the manufacturer certifying that each unit has been constructed to conform to the design specifications, relevant industry standards, and material requirements.

The Contractor shall submit Manufacturer's product literature including, independent test results, details of construction, materials, dimensions, analysis, hardware preparation, color charts and specific finishes, and label compliance.

MATERIALS

Luminaire

Luminaires shall be catalog number K829-P4FL-III-60(SSL)-8060-120-277V-BLACK as manufactured by King Luminaire or approved equal. The luminaire shall have the following specifications:

- Style: K829
- Light Source: Light Emitting Diode (LED)
- Optical System: Flat
- IES Class: Type III
- Wattage: 60
- Voltage: 120-277
- CCT: 4000K
- Finish: Textured Black Powder Coat

All luminaires and poles shall have a label of Underwriters Laboratories, Inc. Luminaires and poles are to be cleaned after they are installed. Any chipped, cracked or otherwise defective material shall be replaced, at no expense to the project.

All fasteners shall be stainless steel and painted black. Access to the internal components of the

light fixture shall not require the use of any tools and the fixture will hinge open for maintenance and not require the fixture to be removed from the arm. The luminaire shall meet the following additional requirements:

- The luminaire shall pass L79, L80 and UL wet location independent testing.
- The LED emitter shall be rated for a minimum of 75,000 hours to a light loss of 70% at an ambient temperature of 25 degrees Celsius.
- The LED emitter shall be rated for a minimum efficacy of 74 lumens per watt at an ambient temperature of 25 degrees Celsius.
- Minimum NEMA IP rating of 66 ingress protection.
- Maximum color temperature of 4,500K.
- The driver shall be rated for a minimum of 80,000 hours at 25 degrees Celsius.

The luminaire shall have a 5-year warranty covering failure of all the components of the LED luminaire including, but not limited to, the lamp housing, all electrical components and wiring, all mechanical components, the internal and external paint finish. Failure of the LED is defined as greater than 50 percent lumen depreciation or outage of half of the emitters.

Pole

The pole shaft shall be catalog number NSH6S-T10-7.0-16.00-TN4.0/8.0-FH-130/2NW-CB as manufactured by Spring City Electrical Mfg. Co. or approved equal. The pole shaft shall have the following specifications:

- Style: Northampton Steel
- Height: 16'-0"
- Material: 16 Sharp Flute
- Finish: Zinc Rich Polyurethane Primer, Aliphatic Polyurethane Topcoat, RAL9005 (Gloss) – Textured Jet Black

The pole shaft shall have a minimum 25-year warranty and a minimum 5-year warranty on the paint finish.

Base

The pole base shall be catalog number DWBNRT-20-DP-CB as manufactured by Spring City Electrical Mfg. Co. or approved equal. The pole shaft shall have the following specifications:

- Style: Northampton Steel
- Base: 20" Diameter
- Material: Two Piece, Heavy Wall Cast Ductile Iron Per ASTM A536-84 Grade 65-45-12 (0.375" Typical Wall)
- Finish: Epoxy Primer, Acrylic Polyurethane Topcoat, RAL9005 (Gloss) - Textured Jet Black
- Access Door: Located In Base To Coincide With Hand Hole In Steel Shaft Secured

- Anchor Bolts: With Tamper Proof Hex Socket Security Machine Screws
Four (4) 1" Dia. X 30" L + 4" Hook
- Bolt Circle: With Tamper Proof Hex Socket Security Machine Screws
11" Diameter
- Bolt Projection: 3" Required
- Tenon Size: 4" Dia. X 8" High (Above Donut)

The proposed ornamental lights along Petronelli Way will be mounted onto the existing foundations currently supporting the existing overhead (i.e. cobra-head) type poles/fixtures. This will require supplying and installing a new anchor bolt adaptor that will allow proper adaptation of the bolt pattern of the new light base to the bolt pattern of the existing foundation. The anchor bolt adaptor shall be manufactured by Light Pole Systems or approved equal and a shop drawing will be required prior to approval and installation.

Cross Arm

The cross arm shall be catalog number KA10-T-3.0-MOD-BLACK as manufactured by King Luminaire or approved equal. The arm shall have the following specifications:

- Style: Brockton
- Material: Aluminum
- Finish: Textured Black Powder Coat
- Tenon Size: Accept 4" Outside Diameter Tenon

The pole base shall be finished on all surfaces internal and external, no exposed metal shall remain. The pole base shall have a minimum 25-year warranty a minimum 5-year warranty on the paint finish. The following manufacturer provides an example that is acceptable:

Photocell & Receptacle Outlet

The proposed light fixtures will be powered by the existing load center located at the intersection of Main Street and Legion Parkway. This will require connection to the nearest access handhole or pullbox located at or near the intersection of Petronelli Way and Main Street. The new light fixtures and GFCI outlets will be powered by separate circuits as described herein.

The lights along Petronelli Way and New City Road will each have their own photocell.

Hardware

All hardware, including screws and fittings shall be stainless steel or approved equivalent rust proof finished metal. For exposed access panel fittings Contractor shall supply brass screws and fittings in place of stainless steel screws and fittings.

City Name Collar

The light pole base shall include a cast iron collar to be installed on the collar of the pole base. The collar will have expressed lettering that reads "CITY OF BROCKTON". The color shall be gloss black or approved equivalent and shall have a minimum 5-year warranty on the collar and the paint finish. Shop drawings for the collar shall be submitted for review and approval.

Wind Load

General Contractor shall coordinate with the lighting and pole manufacturers and the foundation manufacturer to provide calculations, stamped by a Professional Engineer, that verify that the fixtures (including luminaries, banners, brackets, pole and footing) meet or exceed accepted wind loads required by the state building code or AASHTO standards, whichever is more stringent.

CONSTRUCTION METHODS

Light fixtures shall be installed in compliance with the manufacturer's printed instructions.

A neoprene gasket shall be installed between the light pole base and the foundation. The gasket shall be applied prior to base installation. Care must be taken to prevent damage to the pole base finish caused by placement or movement across paved surfaces.

Light poles shall be installed plumb, with bases shimmed as required. After poles are plumbed, the space between the pole and its concrete base shall be solidly grouted with non-shrink grout.

No materials shall be stored within sidewalk areas or roadway areas, including travel lanes, parking lanes and shoulders, without the permission of the City of Brockton and the Engineer.

COMPENSATION

Item 823.101 will be measured per each, complete in place.

Item 823.101 will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work including the anchor bolt adaptor.

A first payment of 25% of the lump sum price for Item 823.101, or 10 percent of the total bid price, whichever is less, will be made on the completion of the following two items:

1. The Contractor shall begin the work under the contract within Ten (10) business days after the written Notice to Proceed (NTP), and
2. The Contractor (bidder) shall submit shop drawings, catalog cuts, and a copy of a purchase order (PO) for the light bases, poles and fixtures within Fifteen (15) business days after the NTP.

A second payment of 25% of the lump sum price for Item 823.101, or 10 percent of the total bid price, whichever is less, will be made on the completion of the following two items:

3. Installation of the light foundations, and
4. Delivery of the light bases, poles and fixtures

Foundations shall be paid for under Item 812.09 Light Standard Foundation Precast. Wire shall be paid for under Item 813.30 Wire Type 7 No. 10 General Purpose and 813.52 Wire Type 10 - #8 Grounding and Bonding respectively.

<u>ITEM 823.71</u>	<u>HIGHWAY LIGHTING POLE AND LUMINAIRE REMOVED & STACKED</u>	<u>EACH</u>
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The work under this item shall conform to the relevant provisions of the Standard Specifications and the following:

The Contractor shall coordinate with City of Brockton Department of Public Works before starting any work.

The work shall include disconnecting the wiring, removing and stacking of the existing light pole, base, luminaire, banner brackets and banners along Petronelli Way as shown on the plans or as required by the Engineer and transporting these materials to the City of Brockton DPW Yard, 301 Oak Hill Way Brockton, MA 02301. The Contractor shall provide the City DPW Commissioner a minimum 7-day notice prior to delivery.

The work shall also include the removal and disposal of any conduit and electrical hand holes no longer required for the existing lighting system or new street light unit proposed in the same location as shown on the plans or as required by the Engineer. In special cases, the existing foundation top can be broken off 12 inches below the elevation of any proposed work and left in place, if approved by the engineer and it does not interfere with the location of any new lighting foundations or other Items.

The Contractor shall exercise extreme caution when working near existing trees. The Contractor shall exercise extreme caution when removing and stacking the existing street light poles and luminaires so as not to damage them. The contractor shall be responsible for any damage caused to existing poles and luminaires to be removed and stacked.

COMPENSATION

Item 823.71 will be measured for payment per each, complete in place.

Item 823.71 will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work including the complete removal and stacking of existing street light pole, base, foundation, luminaire, banner brackets and

banners as shown on the plans or as required by the Engineer.

ITEM 851. SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS LUMP SUM

The work under this item shall conform to Section 850 of the Standard Specifications and the following:

Safety controls for construction operations shall consist of furnishing and installing cones, drums, message boards, signage and barricades as required to accomplish the work as directed by the Engineer.

COMPENSATION

Item 851. Safety Controls for Construction Operations will be paid for at the Contract unit price per lump sum, which price shall include all labor, materials, equipment and incidental costs required to maintain safe access thru the work site at all times. Temporary signs for traffic control will be paid under Item 851. Safety Signing for Construction Operations.

<u>ITEM 866.104</u>	<u>4 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)</u>	<u>FOOT</u>
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<u>ITEM 867.104</u>	<u>4 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)</u>	<u>FOOT</u>
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The work under this item shall conform to Section 860 of the Standard Specifications and the following:

MATERIALS

The surface shall be Federal Green, thermoplastic or as required by the Engineer.

COMPENSATION

Item 866.104 and 867.104 will be measured for payment per linear foot of line marking installed.

Item 866.104 and 867.104 will be paid for at the Contract unit price per linear foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work including layout, pre-marking (spray paint) and mobilization.

<u>ITEM 874.4</u>	<u>TRAFFIC SIGN REMOVED AND STACKED</u>	<u>EACH</u>
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The work under these items shall conform to the relevant provisions of the Standard Specifications and the following:

CONSTRUCTION METHODS

All signs identified to be reset shall be relocated as shown on the plans or as required by the Engineer. The Contractor shall take all necessary precautions not to damage any of the signs during the removal process. All existing sign posts shall be legally disposed of at no additional cost to the project. Any signs damaged (bent, marred, scratched, etc.) during the removal process resulting in reduced reflectivity or overall appearance will be replaced by the Contractor at no additional cost to the project.

All signs removed and stacked shall be delivered to the DPW Yard, 301 Oak Hill Way, Brockton, MA 02301.

COMPENSATION

Item 874.2 Traffic Sign Removed and Reset and Item 874.4 Traffic Sign Removed and Stacked will be measured for payment by the each, complete in place.

Item 874.2 Traffic Sign Removed and Reset and Item 874.4 Traffic Sign Removed and Stacked will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 875.2 PARKING METER POLE REMOVED AND STACKED EACH

The work under this item shall conform to the relevant provisions of the Standard Specifications and the following:

DESCRIPTION

The work shall include careful removal of existing parking meter posts currently located along Petronelli Way from Main Street to Montello Street as shown on the plans or as required by the Engineer and transporting these materials to the City of Brockton DPW Yard, 301 Oak Hill Way Brockton, MA 02301. The Contractor shall provide the City DPW Commissioner a minimum 7-day notice prior to delivery.

CONSTRUCTION METHODS

The Contractor shall remove any concrete from the support pole prior to delivery to the DPW yard.

COMPENSATION

Item 875.2 Parking Meter Pole Removed and Stacked will be measured for payment by the each, which will include the meter head, housing and support pole.

Item 875.2 Parking Meter Pole Removed and Stacked will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to remove the entire meter unit (head, housing and support pole), removal of any concrete attached to support pole upon removal from ground and delivery to the DPW yard as described herein.

ITEM 875.4

PARKING METER

EACH

The work under this item shall conform to the relevant provisions of the Standard Specifications and the following:

DESCRIPTION

The work shall include the installation of a new electronic parking meters as shown on the plans, described herein or as required by the Engineer. The unit shall be manufactured by IPS Group or equivalent with the approval by the City of Brockton.

MATERIALS

All materials shall be new and meet the requirements specified herein:

Support post shall conform to Subsection M8.10.0 of Division III, Materials and be Schedule 40 galvanized steel pipe with an inside diameter of 2 inches. The post shall be powder-coated black.

Cement concrete for meter post footings shall conform to Subsection M4.02.00 of Division III, Materials and be 3500 psi at 28 days, 3/8-inch course aggregate, 5%-8% air entrainment and 2"-5" slump.

The yoke assembly shall be galvanized steel, powder-coated black, configured to support two separate meter housing units. The yoke assembly shall be securely and safely attached to the support post.

The meter housing unit shall be manufactured by IPS Group Model 795 or 895 and have the following features:

Physical

- Lower housing is one-piece integral casting constructed of ductile iron; round door opening machined to close tolerance, provides close fit of vault door; door is hinged internally and located on the front of the lower housing; tolerance between the lower housing door diameter and the lower housing door opening does not exceed 0.030 inches; locked door is - 38 - secured to the lower housing by two opposing, cam activated hardened steel bars; different lock and key used for upper and lower housing; key-way corridor is at least 15/32 inches deep from the outside surface of the doors key-way to the face of the lock, and minimum of 0.280 inches nominal wall thickness
- Upper housing has an impact strength equal to or exceeding zinc alloy Zamac #5; cap assembly fits onto the mechanism housing portion with a metal-to-metal tongue and groove

design; tongue portion is 1/8 inches high and is continuous except for an area not to exceed 2-3/16 inches where the mechanism extends through the housing; cap assembly is hinged to the upper housing to allow for inspection, removal or replacement of the meter mechanism, groove overlaps housing tongue by 1/8 inch; cap strap is capable of being detached by the removal of four internal screws; access to the upper housing is gained through separate lock combination and key and does not allow access to the coin compartment of the lower housing

- Dome is UV resistant, one-piece lens; high impact polycarbonate material; sealed
- Parts shall be cleaned through a five-stage clean iron phosphate system prior to paint application consisting of a powder paint system that applies a polyester TGIC paint electrostatistically at a thickness of 2.5-3.5 mL; oven cured prior to assembly. Paint color shall be black
- Keypad with four easy-to-read mechanical buttons for intuitive payment navigation – rated at more than 250,000 cycles
- Tri-colored LED lights on front and back of meter to indicate status including paid (green), unpaid (red), and fault (yellow)
- Vandal resistant coin slot/chute
- Solar panel and combination rechargeable/back-up battery pack
- Ability to operate under variable environmental conditions including snow, sleet, rain, humidity, dust storms, extreme cold and heat
- RFID technology to allow City to identify meter location and download operating parameters if meter is replaced

Payment Options

- Unit accepts payment using credit/debit card, coins, tokens, and smart card
- Ability to accept contactless payment and NFC applications such as Google Wallet and Apple Pay
- Ability to integrate with pay-by-cell applications
- PA-DSS and Level 1 PCI-DSS certification for secure credit card transactions

Wireless

- Wireless communication via cellular network and connection to a web-based Data Management System (DMS).
- Ability to wirelessly notify City parking operations staff of any faults such as card reader or coin validator jam via text message, email or both.

Graphic Display

- Large 160x160 pixel, backlit LCD that operates at temperatures of -40° F to 185° F.
- Display toggles between multiple screens which can display metered time, parking rates, - 39 - maximum stay period messages, current time of day (including when meter will expire), and other alpha-numeric or graphical messages depending on the status of the meter.
- Display can be programmed remotely via web-based DMS

- In the event of a coin jam, meter will continue to allow payment via credit/debit card, smart card, or pay-by-cell and will display “Cards only, No Coins”. The message is reversed if there is a card reader jam.

Centralized Data Management System

- Ability to integrate with other meter, enforcement, and third-party management systems
- Comprehensive set of financial and technical reports and administrative tools enforcement
- Wireless integration of vehicle detection sensors and smart cash collection systems for additional enforcement features and parking operations analysis.

CONSTRUCTION METHODS

Meter posts shall be cut, before installation to length which will provide a height of 37 inches from finish grade to top of post. Posts shall be set (plumb) in concrete with dimensions 16 inches deep and 18 inches in diameter. The front edge of the concrete foundation shall be 4 inches from the back of curb. Prior to placing concrete, install ½ inch expansion joint material around entire footing perimeter against cement concrete walk. Surface of concrete footing shall be troweled smooth and flush with the surrounding sidewalk.

During cure time cover top opening in steel post to prevent or discourage debris from entering or being forced into the opening.

Install yoke and meter units once concrete has cured and achieved 28-day strength.

COMPENSATION

Item 875.4 Parking Meter will be measured for payment by the each, which will include excavation, support post, cement concrete footing, testing of concrete, yoke (double) and parking meter unit (2).

Item 875.4 Parking Meter will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to install new parking meters as shown on the plans or as required by the Engineer including concrete testing, coordination with City parking reinforcement staff and setup/configuration/testing of the parking meter unit with supplier or meter vendor to ensure complete and full operation that meets requirements of City.

Bonds/Miscellaneous

**VOTE OF CORPORATION
AUTHORIZING EXECUTION OF CONTRACT**

At a meeting of the Board of Directors of _____ duly called and held on _____, 20____, at which a quorum was present and acting throughout, the following vote was duly adopted.

VOTED: THAT _____ the _____ of the corporation, be and hereby is authorized to affix the corporate seal, sign and deliver in the name and behalf of the corporation, any Contract, Agreement or Obligation in this Corporation's name on its behalf.

I do hereby certify that the above is a true and correct copy of the record, that said Vote has not been amended or repealed, and is in full force and effect as of this date, and that _____ is the duly elected _____ of this Corporation.

ATTEST:

Clerk _____

(Corporate Seal)

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we _____(Name of Contractor) a
_____(Corporation, Partnership or Individual) hereinafter
called "Principal" and _____(Surety) of
_____, State of _____
hereinafter called the "Surety," are held and firmly bound unto the City of Brockton,
Massachusetts, _____ hereinafter called
"Owner," in the sum of _____Dollars (\$ _____
_____) in lawful money of the United States for the payment of which sum well and truly to be
made, we bind ourselves, and heirs, executors, administrators and successors, jointly and severally,
firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the Owner, dated the ____ day of _____, 20____, a copy of which is hereto
attached and made a part hereof for _____

_____.

NOW, THEREFORE, if the Principal shall promptly make payments to all persons, firms,
subcontractors and corporations furnishing materials for or performing labor in the prosecution of
the work provided for in such contract, and any authorized extensions or modification thereof,
including all amounts due for materials, lubricants, oil, gasoline, coal, and coke, repairs on
machinery, equipment and tools, consumed or used in connection with the construction of such
work, and all telephone, electric, water or other utility service, or rental of equipment directly
applicable to the contract, and all insurance premiums on said work, and for all labor, performed
in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise
to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulated and agrees that
no change, extension of time, alteration or addition to the terms of the contract or to the work to
be performed thereunder of the specifications accompanying the same shall in any wise affect its
obligation on this bond, and it does hereby waive notice of any such change, extension of time,
alteration or addition to the terms of the contract or to the work or to the specifications.

PROVIDED, FURTHER, that the amount of this bond shall be reduced by and to the extent of any
payment or payments made in good faith hereunder, inclusive of the payment by Surety of
mechanics' liens which may be filed or recorded against such improvements, whether or not claim
for the amount of such lien be presented under and against this bond.

In WITNESS WHEREOF, we hereto set out hands and seals, this the ____ day of _____,
20____.

ATTEST:

(Principal Secretary)

(SEAL)

Witness as to Principal

(Address – Zip Code)

ATTEST:

(Surety Secretary)

(SEAL)

Witness as to Surety

(Address – Zip Code)

Principal

By: _____(S)

(Address – Zip Code)

Surety

By: _____
Attorney-in-Fact

(Address – Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we _____ (Name of Contractor)
a _____ (Corporation, Partnership or Individual)
hereinafter called "Principal" and _____ (Surety) of
_____, State of _____
hereinafter called the "Surety," are held and firmly bound unto the City of Brockton,
Massachusetts, _____ hereinafter called
"Owner," in the sum of _____ Dollars (\$_____
_____) in lawful money of the United States for the payment of which sum well and truly to be
made, we bind ourselves, and heirs, executors, administrators and successors, jointly and severally,
firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the Owner, dated the ____ day of _____, 20__, a copy of which is hereto
attached and made a part hereof for _____

_____.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the
undertakings, covenants, terms, conditions and agreements of said contract during the original
term thereof, and any extension thereof which may be granted by the Owner, with or without notice
to the surety, and if he shall satisfy all claims and demands incurred under such contract, and shall
fully indemnify and save harmless the Owner from all costs and damages which it may suffer by
reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which
the Owner may incur in making good any default, and make at its own cost and expense any and
all defects and deficiencies in materials or workmanship which may appear in the work provided
for in said contract within the period of one (1) year from the date of approval and acceptance of
all work under said contract, then this obligation shall be void; otherwise to remain in full force
and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulated and agrees that
no change, extension of time, alteration or addition to the terms of the contract or to the work to
be performed thereunder or the specifications accompanying the same shall in any wise affect its
obligation, on this bond, and it does hereby waive notice of any such change, extension of time,
alteration or addition to the terms of the contract or to the work or to the specifications.

AND PROVIDED, however, that the Surety and Sureties, for value received, hereby stipulates and
agrees to fully perform and complete the work mentioned and described in said contract and
specifications, or cause said work to be performed and completed pursuant to the terms, conditions
and covenants thereof, if for any cause, said Principal fails or neglects to fully perform and
complete said work; and the Surety of Sureties further agree to commence said work of completion
or cause said work of completion to commence within twenty (20) days' notice thereof from the
Owner and to complete same or cause same to be completed within twenty (20) days of the time
allowed, said Principal, in said contract and specifications for the completion of said work.

AND PROVIDED, THAT THE SAID Surety and Sureties, for value received hereby further stipulate that should the Principal for any reason terminate the contract and have the contract terminated, the Owner shall have the right to complete the contract, under the direction of its own Engineer with all rules, regulations, clauses, etc., of the original contract and specifications in full effect.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any claimant hereunder, whose claim may be unsatisfied.

In WITNESS WHEREOF, we hereto set out hands and seals, this the ____ day of _____, 20____.

ATTEST:

(Principal Secretary)

(SEAL)

Principal

By: _____(S)

Witness as to Principal

(Address – Zip Code)

(Address – Zip Code)

ATTEST:

(Surety Secretary)

(SEAL)

Surety

By: _____
Attorney-in-Fact

(Address – Zip Code)

Witness as to Surety

(Address – Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond.

Attachment A

Soil Testing Report

**TEST PIT EXCAVATION AND SOIL CHARACTERIZATION
BPA LOT D (PARCELS 109-054 AND 109-05) AND BPA LOT E (PARCEL 109-044)
FRANKLIN STREET
BROCKTON, MASSACHUSETTS**

Prepared for:

City of Brockton
Department of Planning and Economic Development
45 School Street
Brockton, Massachusetts 02760

Prepared by:

Ransom Consulting, LLC
60 Valley Street, Building F, Suite 106
Providence, Rhode Island 02909
(401) 433-2160

Project 201.02017.001
March 30, 2021

EXECUTIVE SUMMARY

On behalf of the City of Brockton, Massachusetts (the “City”), Ransom Consulting, LLC (Ransom) has prepared this report to address recent test pit soil excavation and soil characterization activities conducted for Brockton Parking Authority (“BPA”) Lot D (Parcels 109-054 and 109-055) and BPA Lot E, (Parcel 109-044) located on Franklin Street in Brockton, Massachusetts, herein referenced as the “Site.” This report summarizes the activities performed in January 2021.

The Site is comprised of three parcels that are currently utilized as public parking lots. Parcel 109-044 measures 13,588 square feet (SF) and is located to the north of Franklin Street and south of Court Street. Parcels 109-054 and 109-055 measuring 15,087 and 10,321 SF, respectively and are located to the south of Franklin Street and north of Petronelli Way.

It is Ransom’s understanding that the City will be developing the eastern portion of the Site as a new street and that the remaining portions of the Site will be redeveloped for residential use. The objective of recent Site activities was to assess impacts to soils within the proposed new street that are anticipated to be disturbed and managed during construction. This investigation supplemented the Phase II Environmental Site Assessment (ESA) conducted by Ransom in 2020, which revealed the evidence of suspect buried construction & demolition (C&D) debris, along with concentrations of lead and polycyclic aromatic hydrocarbons (PAHs) and asbestos in soil. There is no evidence of impacts to Site groundwater.

The Site was developed in the late 1800s, with various uses, including residential, commercial and parking. There is evidence that portions of the Site were historically developed for industrial use, including portions of a shoe factory complex.

Based on the results of recent activities, Ransom makes the following conclusions and recommendations:

1. **Fill Materials and Buried C&D Debris:** Ransom observed evidence of anthropogenic fill materials at approximate depths ranging from 0.5 to 5 feet below ground surface (bgs). The 2020 geophysical survey revealed the evidence of buried “scattered” construction & demolition (C&D) debris, along with evidence of larger debris (suspect reinforced concrete), attributed to former buildings, located in at an approximate depth of 2 to 6 bgs.
2. **Lead Contaminated Soil:** Leachable lead was detected in some of the soil samples at concentrations exceeding the limit established by the U.S. EPA for materials determined to be a “characteristic” hazardous waste. The concentration of leachable lead in several samples exceeded the 5 milligrams per liter (mg/l) limit which would result in the soil being considered a “characteristic” hazardous waste if it were to be transported off-site in its current condition. The highest leachable lead concentration (78.3 mg/l) coincided with fill materials and debris (i.e., roofing, plaster and tar) that exhibited high lead concentrations (up to 13,130 milligrams per kilogram), observed at a test pit excavated at Parcel 109-044. Ransom recommends that the field-screening of soils be conducted, using an X-Ray Fluorescence (XRF) detector during construction activities, to allow for the segregation and proper management of these soils and debris, along with sampling and analysis. Site workers managing these debris must adhere to the Occupational Safety and Health Administration (OSHA) Lead Construction Standard. Ransom recommends the implementation dust suppression measures during construction activities to mitigate lead exposure to workers and receptors. Lead stabilization of soils is a potential treatment

option that may be considered. However, screening of debris may be required for effective treatment.

3. **Asbestos-Containing Materials (ACM):** ACM was detected in non-friable cementitious/transite shingles, observed in two test pits at approximate depths ranging from 0.5 to 5 feet bgs. These debris require management under the Massachusetts Department of Environmental Protection (MassDEP) Asbestos Regulation (310 CMR 7.15), which is anticipated to include the preparation of an Asbestos Non-Traditional Work Plan (NTWP) to facilitate the abatement of these materials prior to redevelopment. Asbestos was not detected in soil samples collected from the test pits at concentrations greater than 1 percent.
4. With the exception of lead and PAHs, other contaminants were not detected in the soil samples at concentrations above their corresponding MassDEP RCS-1 Reportable Concentrations. PAH and some lead impacts are attributable to the presence of anthropogenic fill (observed at approximate depths ranging from 0.5 to 5 feet bgs) and associated with the presence of coal ash and wood ash. Higher concentrations of lead appear to be co-mingled with buried C&D debris containing lead.
5. For soils that are to be reused on-site, Ransom recommends that these soils be placed under building footprints or suitable cover (i.e., asphalt pavement or concrete walkways) to mitigate potential exposure to receptors (i.e., occupants, visitors, workers). If soils are deemed unsuitable for on-site reuse, Ransom recommends proper off-site management of these soils to licensed receiving facilities and to avoid potential reuse of these soils at off-Site locations, including those that may pose a risk of exposure to receptors (i.e., residences, day care centers, playgrounds). Although fill and buried C&D debris may potentially be reused as backfill, Ransom recommends that a geotechnical engineering evaluation be conducted to assess the feasibility of reusing this material on-site.

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TABLE

Table 1:	Summary of Soil Analytical Results-Disposal Characteristics
Table 2:	Summary of Soil Analytical Results-Lead and Asbestos

FIGURES

Figure 1:	Test Pit Locations and Proposed New Road
Figure 2:	Test Pit Locations

APPENDICES

Appendix A:	Test Pit Logs
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1.0 INTRODUCTION

On behalf of the City of Brockton, Massachusetts (the “City”), Ransom Consulting, LLC (Ransom) has prepared this report to address recent test pit soil excavation and waste characterization activities conducted for Brockton Parking Authority (“BPA”) Lot D (Parcels 109-054 and 109-055) and BPA Lot E, (Parcel 109-044) located on Franklin Street in Brockton, Massachusetts, herein referenced as the “Site.” This report summarizes the activities performed in January 2021.

The Site is comprised of three parcels that are currently utilized as public parking lots. Parcel 109-044 (Parking Lot E) measures 13,588 square feet (SF) and is located to the north of Franklin Street and south of Court Street. Parcels 109-054 and 109-055 (Parking Lot D) measuring 15,087 and 10,321 SF, respectively, are located to the south of Franklin Street and north of Petronelli Way.

It is Ransom’s understanding that the City will be developing the eastern portion of the Site as a new street and that the remaining portions of the Site will be redeveloped for residential use. According to the City’s Construction Administrator, VHB, soils are anticipated to be excavated to an approximate depth of 2.5 feet below ground surface (bgs) during construction of the road. Localized excavation will be conducted to an approximate depth of 5 feet bgs to accommodate the installation of drainage manholes and associated conveyance piping, and to an approximate depth of 8.5 feet bgs to accommodate installation of catch basins.

The objective of recent Site activities was to assess impacts to soils within the proposed street that are anticipated to be disturbed and managed during construction. This investigation supplemented the Phase II Environmental Site Assessment (ESA) conducted by Ransom in 2020, which revealed the evidence of suspect buried construction & demolition (C&D) debris, along with concentrations of lead and polycyclic aromatic hydrocarbons (PAHs) and asbestos in soil. There is no evidence of impacts to Site groundwater.

2.0 GENERAL SITE DESCRIPTION AND HISTORY

2.1 Site Description and Current Use

The Site consists of two abutting City-owned asphalt-paved public parking lots, measuring 15,087 and 10,321 square feet, respectively.

2.2 Site Location and Surrounding Area

The Site is located in an area of mixed-use. The Site is abutted to the north by Franklin Street; beyond which are parking lots and an automotive repair facility; to the east by a parking lot; to the south by Petronelli Way, beyond which is a parking lot and parking garage; and, to the west by an abandoned building.

2.3 Site History

Parcel 109-054 was developed for residential and commercial use from at least the late 1800s to the 1930s and used as a parking lot since at least 1950. Parcel 109-055 was developed for residential use during the same time period through at least the late 1960s and was later occupied by a hotel, a meeting hall, and a “chemist.” This lot has been used as a parking lot since the 1970s. The residences located along the eastern portion of the Site in the late 1800s appear to have been part of a former shoe factory complex.

Parcel 109-044 was initially developed in the 1800s as residences until the eastern half of the Site was redeveloped into a saw and planing mill by 1889. At this time, the Site was surrounded by shoe and boot factories. The mill operated at the eastern half of the Site and included an on-site coal house and machine shop. Sometime around the 1900s, some structures associated with the saw and planing mill were demolished and F.L Price Leather occupied the Site. The next available piece of historical information, a City Directory dated 1941, did not indicate the presence of F.L. Price, suggesting its vacancy sometime between 1909 and 1941. A mixture of residential, commercial and industrial operations occupied the Site until 1960 when the Site was redeveloped into the existing parking lot. Based on the former industrial use of the eastern half of the Site as a saw and planing mill, machine shop, coal house, and as a portion of F.L Price Leather during a time that precluded modern hazardous material storage, use, and disposal practices as well as strict environmental regulations, the potential existed for impacts from historic site operations.

2.4 Oil and/or Hazardous Material (OHM) Use and Storage History

There are no known municipal or state records of aboveground storage tanks (ASTs) or underground storage tanks (USTs) at the Site. There is no evidence of current use or storage of oil and/or hazardous materials (OHM) at the Site.

4.0 SUMMARY OF TEST PIT EXCAVATION ACTIVITIES

4.1 Soil Sampling and Waste Characterization

On January 11 and 12, 2021, Ransom observed the excavation of ten test pits (TP-1 through TP-10) across the Site. Trident Environmental Group (Trident) of Norfolk, Massachusetts performed the excavation activities. Two asbestos inspectors from EFI Global, Inc. (EFI) of Wilmington, Massachusetts performed oversight to identify suspect asbestos-containing materials (ACM).

The test pits were excavated to approximate depths ranging from 1.5 to 9.5 feet below the ground surface (bgs). The dimensions of the test pits for the shallow test pits (to 5 feet bgs) measured 2 feet by 5 feet in area and the deeper test pits measured 2 feet by 10 feet in area. The proposed test pit locations and depths were reviewed by the City and VHB in advance of Site activities. The proposed New Street and test pit locations are shown in Figure 1 and test pit locations are shown in Figure 2.

Water was provided to implement dust suppression measures and an encapsulant was available to be applied to friable ACM, if encountered. Based on Site conditions and observations, implementation of these measures was not required.

Soil samples were field screened for the presence of organic vapors using a photoionization detector (PID)-equipped instrument; organic vapors were not detected at concentrations above 5 part per million by volume (ppmv).

Ransom collected two soil samples from each test pit (with the exception of an extra sample from TP-8) for analysis of Lead by U.S. EPA Method 6010C. The samples were submitted to Alpha Analytical, Inc. (Alpha) of Westborough, Massachusetts. Sample results exceeding 100 milligrams per kilogram (mg/kg) were analyzed for Toxicity Leaching Characteristics Procedure (TCLP) Lead.

EFI collected two duplicate soil samples (20 total) and visually suspect ACM building debris samples (30 total) from test pits for asbestos analysis using polarized light microscopy (PLM), which were submitted to Asbestos Identification Laboratory of Woburn, Massachusetts. Building material debris samples collected from TP-10 were also submitted to SanAir Technology Laboratory of Powhatan, Virginia for analysis of lead by Flame atomic absorption spectrometer (AAS).

Two composite soil samples (COMP-1, COMP-3) were collected from 0 to 5 feet bgs and two composite soil sample were collected from 5 to 9.5 feet bgs (COMP-2, COMP-4). COMP-1/COMP-2 soil samples were collected from Parking Lot D and COMP-3/COMP-4 samples were collected from Parking Lot E. The samples were submitted to Alpha and were analyzed for the following disposal parameters:

1. Total petroleum hydrocarbons (TPH) by a Modified U.S. EPA Method 8015C.
2. VOCs by U.S. EPA Method 8260C.
3. Semi-VOCs by U.S. EPA Method 8270D.
4. Polychlorinated biphenyls (PCBs) by U.S. EPA Method 8082A.
5. Resource Conservation and Recovery Act (RCRA) metals by U.S. EPA Methods 6010C/7471B.

6. Conductivity by U.S. EPA Method 9050A.;
7. pH by U.S. EPA Method 9045D.
8. Reactive cyanide and sulfide by U.S. EPA Method 1.7.3.
9. Ignitability by U.S. EPA Method 1010A.

Lead results exceeding 100 mg/kg were analyzed for TCLP Lead.

Five soil samples collected from TP-3 (2.5-5.0 FT), TP-10 (0.5-2.5 FT and 2.5-5.0 feet), TP-9 (0.5-2.5 FT), COMP-33 (0.5-5.0 FT) were submitted to Alpha for lead paint and coal ash analysis. Alpha's subcontractor laboratory, Microvision Laboratories, Inc., performed analysis by scanning electron microscopy (SEM)/energy dispersive X-ray spectroscopy (EDS), polarized light microscopy (PLM) and macroscopic inspection.

4.2 Results

4.2.1 Site Geology

Based on observations made by Ransom, lithology is comprised of layers of silt and fine to coarse sand with varying amounts of gravel, cobbles, and urban fill materials (including, brick, glass, clinkers and coal fragments). Ransom and EFI observed evidence of building material debris within the top 5 feet of soil. Large sections of roofing materials were observed along the northern portion of the Site with this depth interval. There was evidence of large cobbles (exceeding 6 inches diameter) throughout the Site, and heavily concentrated at the northern portion of the Site. Localized suspect organic soils were observed at TP-12. Soils observed at depths exceeding 5 feet bgs appear to be native soils, comprised of sand, silt and clayey silt. Groundwater was not encountered.

The proposed depths of excavation were not accomplished at the southern portion of the Site (TP-1), due to a suspect layer of asphalt encountered at an approximate depth of 1.5 feet bgs. Additionally, excavation depths were not accomplished at the northeastern portion of Parcels 109-054-055 (TP-5), due to soil cave-in at an approximate depth of 5 feet bgs.

Test Pit Logs are included as Appendix A. A Photographic Log of pertinent Site observations is included as Appendix B.

4.2.2 Analytical Results-Soil

Analytical results are summarized in Tables 1 and 2 and discussed below. Copies of the laboratory analytical reports are provided in Appendix C.

Lead

Lead was detected in the samples at concentrations ranging from 18.6 to 10,100 milligrams per kilogram (mg/kg). The highest lead concentration was detected in soil collected from TP-10 (0.5 to 2.5 feet bgs).

Nine lead sample results that exceeded 100 mg/kg were analyzed for TCLP Lead. Four of the TCLP sample results (COMP-3, TP-9, TP-10 [2 samples]) exceeded 5.0 milligrams per liter (mg/L), which is the toxicity threshold for characterizing soil as hazardous waste.

VOCs

VOCs were not detected in the samples at concentrations above laboratory reporting limits.

Other RCRA Metals

With the exception of selenium and silver, RCRA metals were detected samples at concentrations ranging from 0.341 to 62.4 mg/kg.

PCBs

PCBs were not detected in the samples at concentrations above laboratory reporting limits.

TPH

TPH was detected at concentrations ranging from 52.8 to 929 mg/kg.

Semi-VOCs

Several SVOCs, all of which are PAHs, were detected in the samples at concentrations ranging from 0.16 to 5.2 mg/kg.

Asbestos-Containing Materials

Asbestos was not detected in the soil samples.

Other Materials

Coal, coal ash, wood ash, “woody particles with lead” and coal were identified in soil samples.

Laboratory analytical reports are attached as Appendix C.

4.2.3 Analytical Results-Building Material Debris

Asbestos was detected in 4 samples visually identified by EFI as transite/cementitious shingles at concentrations of 20% and 30% chrysotile. These samples were collected from TP-5 and TP-6, at an approximate depth of 0.5 to 5 feet bgs.

Based on the high lead results detected in soil at TP-10 (up to 10,100 mg/kg), Ransom requested EFI to analyze the building debris samples collected from TP-10. The lead results for the building material debris collected from TP-10 ranged from 244 to 11,940 mg/kg.

EFI’s report is attached as Appendix D.

5.0 NATURE AND EXTENT OF CONTAMINATION

5.1 Source of Contamination

Ransom finds that the presence of contaminated urban fill soils is the primary source of OHM impacts to soil. The origin of the fill materials is unknown and is not attributed to the emplacement of fill materials sourced from historic manufacturing activities at the Site. A potential on-site source of contamination other than the historic fill was not identified.

5.2 Nature of Contamination

The contaminants of concern (COCs) at the Site include PAHs, lead and asbestos.

5.3 Extent of Contamination

5.3.1 Soil

Based on the analytical results of the soil sampling and observations made in the field, the extent of soil contamination appears to be ubiquitous throughout the Site to an approximate depth of 5 feet bgs. Elevated lead concentrations in soil, specifically soils that are characterized as hazardous waste, appear to be associated with co-mingled buried building material debris, which were observed at the northern portion of the Site.

5.3.2 Building Material Debris

Lead was detected in building material debris sampled from TP-10 at high concentrations similar to surrounding soils, suggesting that soils characterized as hazardous waste are co-mingled with lead-containing debris.

Asbestos was detected in building material debris that was visually identified by EFI in the field as transite shingles at test pits TP-5 and TP-6. There was no evidence of friable ACM.

5.3.3 Groundwater

Based on the results of prior investigations, groundwater at the Site has not been adversely impacted by the presence of the overlying urban fill soils.

5.4 Assessment of Urban Fill

Due to the presence of urban fill across the Site as confirmed by field observations and the presence of detectable concentrations of PAHs and lead, Ransom evaluated the urban fill with respect to the definition of Anthropogenic Background as provided by 310 CMR 40.0006:

Anthropogenic Background means those levels of OHM that would exist in the absence of the disposal site and which are:

1. Attributable to atmospheric deposition of industrial process or engine emissions and are ubiquitous and consistently present in the environment at and in the vicinity of the disposal site;

2. Attributable to Historic Fill; or
3. Associated with sources specifically exempt from the definitions of a disposal site or release as those terms are defined in CMR 40.0006.

Historic Fill means fill material that based on the weight of evidence and consistent with the conceptual site model:

1. Was emplaced before January 1, 1983;
2. May contain, but is not primarily composed of, construction and demolition debris, reworked soils, dredge spoils, coal ash, wood ash or other solid waste material;
3. Was contaminated with metals, hydrocarbons, and/or PAHs prior to emplacement, at concentrations consistent with the pervasive use and release of such materials prior to 1983;
4. Does not contain OHM originating from operations or activities at the location of emplacement;
5. Is not and does not contain a generated hazardous waste, other than Oil or Waste Oil;
6. Does not contain chemical production waste, manufacturing waste, or waste from processing of metal or mineral ores, residues, slag or tailings; and
7. Does not contain waste material disposed in a municipal solid waste dump, burning dump, landfill, waste lagoon or other waste disposal location.

Based on Ransom's understanding of the land use history of the Site, observations made this investigation, and soil sample chemical analysis results, Ransom concludes that some of the urban fill soils at the Site meet the definition of Historic Fill and are consistent with Anthropogenic Background.

However, higher concentrations of lead appear to be co-mingled with buried C&D debris containing lead (considered to be a contaminant source).

6.0 REGULATORY STATUS

6.1 MassDEP Reporting Condition Evaluation

To determine if a new condition requiring MassDEP notification exists at the Site as provided by 310 CMR 40.0315(1) and (2), Ransom compared the detected concentrations of contaminants in soil to their corresponding Reportable Concentrations (RCs) as provided by 310 CMR 40.1600. Because the Site is located within 500 feet of residential or residentially-zoned land, reporting category RCS-1 applies to soil contaminants.

As shown in Table 1, several contaminants, primarily lead and PAHs, were detected at concentrations exceeding their corresponding RCS-1 RCs. However, as provided by 310 CMR 40.0317 (9), “releases of oil and/or hazardous materials related to coal, coal ash, or wood ash, excluding wood ash resulting from the combustion of lumber or wood products that have been treated with chemical preservatives,” do not represent a MassDEP reportable condition. Based on the results of laboratory analysis, there is evidence of coal, coal ash and wood ash in Site soil.

Further, as provided by MassDEP’s Technical Guidance “Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil” dated May 23, 2002, MassDEP has published background concentrations for a variety of metals and PAHs. A comparison of the maximum detected concentrations of lead and PAHs in the samples collected by Ransom to their corresponding Concentrations in Soil Containing Coal Ash or Wood Ash Associated with Fill Material is provided in Table 1. The detected concentrations of some of the lead concentrations and several of the PAHs are below their corresponding background concentrations. With respect to those PAHs which were detected at maximum concentrations above their corresponding background concentrations (i.e., benzo(a)pyrene and dibenzo(a,h)anthracene) the detected concentrations are within the range of concentrations the MassDEP used to develop the background concentrations and are not significantly higher than their corresponding background concentrations.

However, there is evidence of elevated lead concentrations that exceed MassDEP Background Levels for Fill Materials which appear to be attributable to co-mingled fill materials containing building material debris, which appears to represent a reportable condition.

6.2 Soil Reuse Options

Although a MassDEP reportable condition was not identified at the Site for some of the soils, the presence of urban fill soils with lead and PAHs at concentrations above their corresponding RCS-1 RCs requires management of these soils as a Remediation Waste if they are removed from the Site as required by 310 CMR 40.0030.

As shown in Table 1, the TCLP lead exceedance for soils collected within the 0 to 5-foot depth interval exceeds the acceptance criteria for unlined and lined landfills established in MassDEP Policy # COMM-97-001. Leachable lead was detected in some of the soil samples at concentrations that require off-Site management as a hazardous waste. The concentration of leachable lead in these samples exceeded the 5 mg/l limit which result in the soil being considered a “characteristic” hazardous waste. Lead stabilization of soils is a potential treatment option that may be considered. However, screening of debris may be required for effective treatment.

ACM was detected in non-friable cementitious/transite shingles, observed in two test pits (TP-5 and TP-6) at approximate depths ranging from 0.5 to 5 feet bgs. These debris require management under the MassDEP Asbestos Regulation (310 CMR 7.15) and preparation of an Asbestos Non-Traditional Work Plan (NTWP). There was no evidence of ACM impacts to soil during this assessment.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the information presented in this report, Ransom makes the following conclusions and recommendations:

1. **Fill Materials and Buried C&D Debris:** Ransom observed evidence of anthropogenic fill materials at approximate depths ranging from 0.5 to 5 feet below ground surface (bgs). The 2020 geophysical survey revealed the evidence of buried “scattered” C&D debris, along with evidence of larger debris (suspect reinforced concrete), attributed to former buildings, located in at an approximate depth of 2 to 6 bgs.
2. **Lead Contaminated Soil:** Leachable lead was detected in some of the soil samples at concentrations exceeding the limit established by the U.S. EPA for materials determined to be a “characteristic” hazardous waste. The concentration of leachable lead in several samples exceeded the 5 milligrams per liter (mg/l) limit which would result in the soil being considered a “characteristic” hazardous waste if it were to be transported off-site in its current condition. The highest leachable lead concentration (78.3 mg/l) coincided with fill materials and debris (i.e., roofing, plaster and tar) that exhibited high lead concentrations (up to 13,130 milligrams per kilogram), observed at a test pit excavated at Parcel 109-044. Ransom recommends that the field-screening of soils be conducted, using an X-Ray Fluorescence (XRF) detector during construction activities, to allow for the segregation and proper management of these soils and debris, along with sampling and analysis. Site workers managing these debris must adhere to the Occupational Safety and Health Administration (OSHA) Lead Construction Standard. Ransom recommends the implementation dust suppression measures during construction activities to mitigate lead exposure to workers and receptors. Lead stabilization of soils is a potential treatment option that may be considered. However, screening of debris may be required for effective treatment.
3. **Asbestos-Containing Materials (ACM):** ACM was detected in non-friable cementitious/transite shingles, observed in two test pits at approximate depths ranging from 0.5 to 5 feet bgs. These debris require management under the Massachusetts Department of Environmental Protection (MassDEP) Asbestos Regulation (310 CMR 7.15), which is anticipated to include the preparation of an Asbestos Non-Traditional Work Plan (NTWP) to facilitate the abatement of these materials prior to redevelopment. Asbestos was not detected in soil samples collected from the test pits at concentrations greater than 1 percent.
4. With the exception of lead and PAHs, other contaminants were not detected in the soil samples at concentrations above their corresponding MassDEP RCS-1 Reportable Concentrations. PAH and some lead impacts are attributable to the presence of anthropogenic fill (observed at approximate depths ranging from 0.5 to 5 feet bgs) and associated with the presence of coal ash and wood ash. Higher concentrations of lead appear to be co-mingled with buried C&D debris containing lead.
5. For soils that are to be reused on-site, Ransom recommends that these soils be placed under building footprints or suitable cover (i.e., asphalt pavement or concrete walkways) to mitigate potential exposure to receptors (i.e., occupants, visitors, workers). If soils are deemed unsuitable for on-site reuse, Ransom recommends proper off-site management of

these soils to licensed receiving facilities and to avoid potential reuse of these soils at off-Site locations, including those that may pose a risk of exposure to receptors (i.e., residences, day care centers, playgrounds). Although fill and buried C&D debris may potentially be reused as backfill, Ransom recommends that a geotechnical engineering evaluation be conducted to assess the feasibility of reusing this material on-site.

9.0 LIMITATIONS

This report was prepared for the use of the City of Brockton, Massachusetts. The findings provided by Ransom in this report were based solely on the information reported in this document. Should additional information become available in the future, this information should be reviewed by Ransom and the findings presented herein may be modified.

The response actions completed at the Site have been undertaken in accordance with generally accepted consulting engineering practices. No other warranty, expressed or implied, is made. It is Ransom's understanding that this report is to be used exclusively by the City of Brockton until it is filed with MassDEP, at which time it will become a part of the public record. Until this report is filed with the MassDEP, the content of this report may not be copied, provided to, or otherwise communicated to any party not directly involved in this response, in whole or in part, without the written consent of Ransom.

10.0 REFERENCES

1. Phase I ESA, BPA Parking Lot D, Parcel 109-054, TRC, July 18, 2011
2. Phase I ESA, BPA Parking Lot D Parcel 109-055, TRC, July 18, 2011
3. Phase II Environmental Site Assessment Summary Report, BPA Parking Lot D, Parcels 109-054 and 109-055, TRC, February 2012
4. Phase II ESA, Ransom, Parcel 109-044, September 29, 2020.
5. Phase II ESA, Ransom, Parcels 109-054 and 109-055, September 4, 2020.

TABLE 1: SUMMARY OF SOIL ANALYTICAL RESULTS-DISPOSAL CHARACTERISTICS Test Pit Excavation Parking Lots Parcels 109-054/055 and 109-044 Brockton, Massachusetts														
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	COMP1	COMP2	
Sampled By												Ransom	Ransom	
Sample Date												1/11/2021	1/11/2021	
Sample Depth (feet)												0.5-5.0	5.0-9.5	
Lab ID Number	RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101367-10	L2101367-11	
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)												
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	100	100		BRL	BRL	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)												
Arsenic		20	20	20	20	20	50	500	40	40	20	3.54	0.871	
Barium		1,000	1,000	1,000	3,000	3,000	5,000	5,000	~	~	50	62.4	27	
Cadmium		70	70	70	100	100	100	10	80	30	3	0.481	BRL (0.447)	
Chromium		100	100	100	200	200	200	200	1000	1000	40	11.8	13	
Lead		200	200	200	600	600	600	600	2000	1000	600	141	23.8	
Mercury		20	20	20	30	30	30	300	10	10	1	0.162	0.341	
Selenium		400	400	400	700	700	700	700	~	~	1	BRL (2.13)	BRL (2.23)	
Silver		100	100	100	200	200	200	200	~	~	5	BRL (0.426)	BRL (0.447)	
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	None	None	~	BRL (0.5)	--	
Polychlorinated Biphenyls (PCBs)		Concentrations in milligrams per kilogram (mg/kg)												
all analyzed PCBs BRL (unless listed below)											--	BRL (0.0357)	BRL (0.0384)	
Total PCBs		~	~	~	~	~	~	~	<2	<2		BRL (0.0357)	BRL (0.0384)	
Total Petroleum Hydrocarbons (TPH)		Concentrations in milligrams per kilogram (mg/kg)												
		1,000	1,000	1,000	3,000	5,000	5,000	5,000	5,000	2,500	--	287	88.6	
Semivolatile Organic Compounds (SVOCs)		Concentrations in milligrams per kilogram (mg/kg)												
all analyzed SVOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Anthracene		1,000	1,000	1,000	3,000	3,000	5,000	5,000	~	~	4	1.4	BRL (0.11)	
Acenaphthene		1,000	1,000	1,000	3,000	3,000	5,000	5,000		~	2	0.43	BRL (0.15)	
Acenaphthylene		1	600	10	600	10	600	10		~	1	0.64	BRL (0.15)	
Benzo(a)anthracene		7	7	7	40	40	300	300	~	~	9	3.6	0.47	
Benzo(a)pyrene		2	2	2	7	7	30	30	~	~	7	3.1	0.48	
Benzo(b)fluoranthene		7	7	7	40	40	300	300	~	~	8	3.8	0.59	
Benzo(ghi)perylene		1,000	1,000	1,000	3,000	3,000	5,000	5,000	~	~	3	1.9	0.28	
Benzo(k)fluoranthene		70	70	70	400	400	3,000	3,000	~	~	4	1	0.5	
Chrysene		70	70	70	400	400	3,000	3,000	~	~	7	3.1	0.44	
Dibenzo(a,h)anthracene		1	1	1	4	4	30	30	~	~	1	0.49	BRL (0.08)	
Fluoranthene		1,000	1,000	1,000	3,000	3,000	5,000	5,000	~	~	10	5.7	0.91	
Fluorene		1,000	1,000	1,000	3,000	3,000	5,000	5,000	~	~	1	0.47	BRL (0.19)	
Indeno(1,2,3-cd)pyrene		7	7	7	40	40	300	300	~	~	3	1.9	0.29	
2-methylnapthalene		700	80	300	80	500	80	500	~	~	0.5	0.16	BRL (0.08)	
Napthalene		400	20	500	20	1,000	20	3,000	~	~	1	0.39	BRL (0.19)	
Phenanthrene		10	500	500	1,000	1,000	3,000	3,000	~	~	20	4.8	0.47	
Pyrene		1,000	1,000	1,000	3,000	3,000	5,000	5,000	~	~	20	5.3	0.82	
Total SVOCs		~	~	~	~	~	~	~	100	100		38	5	
Other Analyses														
Total Solids (%)		~	~	~	~	~	~	~	~	~	--	91.5	72	
Specific Conductance (umhos/cm)		~	~	~	~	~	~	~	~	~	--	100	85.6	
Reactive Cyanide (mg/kg)		~	~	~	~	~	~	~	~	~	--	BRL (10)	BRL (10)	
Reactive Sulfide (mg/kg)		~	~	~	~	~	~	~	~	~	--	BRL (10)	BRL (10)	
Ignitability		~	~	~	~	~	~	~	~	~	--	NI	NI	
pH (H)		~	~	~	~	~	~	~	~	~	--	8.5	7.5	
Asbestos												--	--	
NOTES: 1. BRL = Not detected above the lab reporting limits shown in parenthesis 2. ~ = No Method 1 Standard or UCL available; "- "= Not Applicable 3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard 4. NI=Not Ignitable 5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting														

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-DISPOSAL CHARACTERISTICS Test Pit Excavation Parking Lots Parcels 109-054/055 and 109-044 Brockton, Massachusetts												
Sample Identification	Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards								COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials		COMP3	COMP4
Sampled By													Ransom	Ransom
Sample Date													1/12/2021	1/12/2021
Sample Depth (feet)													0.5-5.0	5.0-9.0
Lab ID Number	RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills			L2101571-11	L2101571-12
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)												
all analyzed VOCs BRL (unless listed below)	VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs	~	~	~	~	~	~	~	~	100	100			BRL	BRL
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)												
Arsenic	20	20	20	20	20	50	50	500	40	40	20		2.51	1.55
Barium	1,000	1,000	1,000	3,000	3,000	5,000	5,000	10,000	~	~	50		45.6	29.6
Cadmium	70	70	70	100	100	100	10	1,000	80	30	3		BRL (0.432)	BRL (0.488)
Chromium	100	100	100	200	200	200	200	2,000	1000	1000	40		16.7	12.2
Lead	200	200	200	600	600	600	600	6,000	2000	1000	600		912	25.8
Mercury	20	20	20	30	30	30	30	300	10	10	1		0.5	0.81
Selenium	400	400	400	700	700	700	700	7,000	~	~	1		BRL (0.5)	0.5
Silver	100	100	100	200	200	200	200	2,000	~	~	5		BRL (0.5)	BRL (0.5)
TCCLP Lead (concentrations in milligrams per liter [mg/L])	~	~	~	~	~	~	~	~	None	None	~		5.05	--
Polychlorinated Biphenyls (PCBs)		Concentrations in milligrams per kilogram (mg/kg)												
all analyzed PCBs BRL (unless listed below)											--		BRL (0.0376)	BRL (0.0405)
Total PCBs	~	~	~	~	~	~	~	~	<2	<2				
Total Petroleum Hydrocarbons (TPH)		Concentrations in milligrams per kilogram (mg/kg)												
	1,000	1,000	1,000	3,000	5,000	5,000	5,000	10,000	5,000	2,500	--		929	52.8
Semivolatile Organic Compounds (SVOCs)		Concentrations in milligrams per kilogram (mg/kg)												
all analyzed SVOCs BRL (unless listed below)	VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Anthracene	1,000	1,000	1,000	3,000	3,000	5,000	5,000	10,000	~	~	4		2.2	BRL (0.12)
Acenaphthene	1,000	1,000	1,000	3,000	3,000	5,000	5,000	10,000		~	2		1	BRL (0.16)
Acenaphthylene	1	600	10	600	10	600	10	10,000		~	1		BRL (0.3)	BRL (0.16)
Benzo(a)anthracene	7	7	7	40	40	300	300	3,000	~	~	9		5.2	0.24
Benzo(a)pyrene	2	2	2	7	7	30	30	300	~	~	7		4.6	0.18
Benzo(b)fluoranthene	7	7	7	40	40	300	300	3,000	~	~	8		6.1	0.21
Benzo(ghi)perylene	1,000	1,000	1,000	3,000	3,000	5,000	5,000	10,000	~	~	3		2.8	BRL (0.16)
Benzo(k)fluoranthene	70	70	70	400	400	3,000	3,000	10,000	~	~	4		1.4	BRL (0.12)
Chrysene	70	70	70	400	400	3,000	3,000	10,000	~	~	7		4.9	0.2
Dibenzo(a,h)anthracene	1	1	1	4	4	30	30	300	~	~	1		0.7	BRL (0.086)
Fluoranthene	1,000	1,000	1,000	3,000	3,000	5,000	5,000	10,000	~	~	10		10	0.52
Fluorene	1,000	1,000	1,000	3,000	3,000	5,000	5,000	10,000	~	~	1		0.92	BRL (0.2)
Indeno(1,2,3-cd)pyrene	7	7	7	40	40	300	300	3,000	~	~	3		3.1	BRL (0.16)
2-methylnapthalene	700	80	300	80	500	80	500	5,000	~	~	0.5		0.34	BRL (0.086)
Napthalene	400	20	500	20	1,000	20	3,000	10,000	~	~	1		0.84	BRL (0.2)
Phenanthrene	10	500	500	1,000	1,000	3,000	3,000	10,000	~	~	20		9.9	0.51
Pyrene	1,000	1,000	1,000	3,000	3,000	5,000	5,000	10,000	~	~	20		9	0.43
Total SVOCs	~	~	~	~	~	~	~	~	100	100			63	2
Other Analyses														
Total Solids (%)	~	~	~	~	~	~	~	~	~	~	--		87.9	78.9
Specific Conductance (umhos/cm)	~	~	~	~	~	~	~	~	~	~	--		390	74
Reactive Cyanide (mg/kg)	~	~	~	~	~	~	~	~	~	~	--		BRL (10)	BRL (10)
Reactive Sulfide (mg/kg)	~	~	~	~	~	~	~	~	~	~	--		BRL (10)	BRL (10)
Ignitability	~	~	~	~	~	~	~	~	~	~	--		NI	NI
pH (H)	~	~	~	~	~	~	~	~	~	~	--		6.9	6.4
Asbestos													--	--
NOTES:														
1. BRL = Not detected above the lab reporting limits shown in parenthesis														
2. ~ = No Method 1 Standard or UCL available; "-"= Not Applicable														
3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard														
4. NI=Not Ignitable														
5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting														

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-1	TP-1	TP-2	
Media												soil	soil	soil	
Sampled By												Ransom	EFI	Ransom	
Sample Date												1/11/2021	1/11/2021	1/11/2021	
Sample Depth (feet)												0.5-1.5	0.5-1.5	0.5-2.5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101367-01	662095	L2101367-02
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100	--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	24.8	--	80.6
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	--	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	93.1	--	91.9
Asbestos (%)													--	ND	--
NOTES:															
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3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
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6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste															
7. <u>Boldface/Shaded/Italics/Underlined</u> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill															
8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-2	TP-2	TP-2	
Media												soil	soil	soil	
Sampled By												EFI	Ransom	EFI	
Sample Date												1/11/2021	1/11/2021	1/11/2021	
Sample Depth (feet)												0.5-2.5	2.5-4.5	2.5-4.5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		662096	L2101367-03	662097
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100	--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	--	154	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	BRL (0.5)	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	--	91.2	--
Asbestos (%)													ND		ND
NOTES:															
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3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
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TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS Test Pit Excavation Parking Lots Parcels 109-054/055 and 109-044 Brockton, Massachusetts												
Sample Identification	Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards								COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-3	TP-3	TP-3
Media												soil	soil	soil
Sampled By												Ransom	EFI	Ransom
Sample Date												1/11/2021	1/11/2021	1/11/2021
Sample Depth (feet)												0.5-2.5	0.5-2.5	2.5-5.0
Lab ID Number	RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101367-04	662098	L2101367-05
Volatile Organic Compounds (VOCs)									Concentrations in milligrams per kilogram (mg/kg)					
all analyzed VOCs BRL (unless listed below)	VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs	~	~	~	~	~	~	~	~	100	100		--	--	--
Resource Conservation and Recovery Act (RCRA) Metals									Concentrations in milligrams per kilogram (mg/kg)					
Lead	200	200	200	600	600	600	600	6,000	2000	1000	600	56.2	--	251
TCLP Lead (concentrations in milligrams per liter [mg/L])	~	~	~	~	~	~	~	~	None	None	~	--	--	0.542
Other Analyses														
Total Solids (%)	~	~	~	~	~	~	~	~	~	~	--	92.4	--	90.2
Asbestos (%)												--	ND	
NOTES: 1. BRL = Not detected above the lab reporting limits shown in parenthesis. 2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable 3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard. 4. NI-=Not Ignitable; ND= None Detected 5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting. 6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste 7. <u>Boldface/Shaded/Italics/Underlined</u> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill 8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)														

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS Test Pit Excavation Parking Lots Parcels 109-054/055 and 109-044 Brockton, Massachusetts													
Sample Identification	Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards								COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-3	TP-4	TP-4	
Media												soil	soil	soil	
Sampled By												EFI	Ransom	EFI	
Sample Date												1/11/2021	1/11/2021	1/11/2021	
Sample Depth (feet)												2.5-5.0	0.5-5.0	0-5	
Lab ID Number	RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		662099	L2101367-06	662100	
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~					
Total VOCs		~	~	~	~	~	~	~	100	100		--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	2000	1000	600	--	35.6	--	
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	None	None	~	--	--	--	
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	--	--	88.5	--	
Asbestos (%)													ND	--	ND
NOTES: 1. BRL = Not detected above the lab reporting limits shown in parenthesis. 2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable 3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard. 4. NI-=Not Ignitable; ND= None Detected 5. <i>Boldface/Shaded/Italics:</i> Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting. 6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste 7. <i>Boldface/Shaded/Italics/Underlined</i> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill 8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-4	TP-4	TP-4	
Media												debris	soil	soil	
Sampled By												EFI	Ransom	EFI	
Sample Date												1/11/2021	1/11/2021	1/11/2021	
Sample Depth (feet)												2-3	5.0-9.5	5-9.5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		6611851-4	L2101367-07	662101
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100		--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	43.2	--	
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	--	
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	82.7	--	
Asbestos (%)													ND	--	ND
NOTES:															
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3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
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8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

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		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-4	TP-5	TP-5	
Media												soil	soil	soil	
Sampled By												Ransom	Ransom	EFI	
Sample Date												1/11/2021	1/11/2021	1/11/2021	
Sample Depth (feet)												8	0.5-5.0	0-5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101367-08	L2101367-09	662102
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100	--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	30	145	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	1.45	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	69.2	91	--
Asbestos (%)													--	--	ND
NOTES:															
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		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-5	TP-6	TP-6	
Media												debris	soil	debris	
Sampled By												EFI	EFI	EFI	
Sample Date												1/11/2021	1/12/2021	1/11/2021	
Sample Depth (feet)												0-5	0-5	0-5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		661855-6	661761	662528-9
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100	--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	--	--	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	--	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	--	--	--
Asbestos (%)													30% chrysotile	ND	20-30% chrysotile
NOTES:															
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8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS Test Pit Excavation Parking Lots Parcels 109-054/055 and 109-044 Brockton, Massachusetts												
Sample Identification	Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards								COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-6	TP-7	TP-7
Media												soil	soil	soil
Sampled By												Ransom	Ransom	EFI
Sample Date												1/12/2021	1/12/2021	1/12/2021
Sample Depth (feet)												5.0-9.0	0.5-5.0	0-5
Lab ID Number	RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101571-02	L2101571-03	661759
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)												
all analyzed VOCs BRL (unless listed below)	VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs	~	~	~	~	~	~	~	~	100	100		--	--	--
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)												
Lead	200	200	200	600	600	600	600	6,000	2000	1000	600	18.6	33	--
TCLP Lead (concentrations in milligrams per liter [mg/L])	~	~	~	~	~	~	~	~	None	None	~	--	--	--
Other Analyses														
Total Solids (%)	~	~	~	~	~	~	~	~	~	~	--	84.6	86.8	--
Asbestos (%)												--	--	ND
NOTES: 1. BRL = Not detected above the lab reporting limits shown in parenthesis. 2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable 3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard. 4. NI-=Not Ignitable; ND= None Detected 5. <i>Boldface/Shaded/Italics:</i> Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting. 6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste 7. <i>Boldface/Shaded/Italics/Underlined</i> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill 8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)														

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		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-7	TP-7	TP-7	
Media												debris	soil	soil	
Sampled By												EFI	Ransom	EFI	
Sample Date												1/12/2021	1/12/2021	1/12/2021	
Sample Depth (feet)												0-5	5.0-9.0	5-10	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		662526-7	L2101571-04	661762
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100	--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	--	25.1	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	--	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	--	82.9	--
Asbestos (%)													ND	--	ND
NOTES:															
1. BRL = Not detected above the lab reporting limits shown in parenthesis.															
2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable															
3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
5. <i>Boldface/Shaded/Italics:</i> Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting.															
6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste															
7. <i><u>Boldface/Shaded/Italics/Underlined</u></i> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill															
8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-7	TP-8	TP-8	
Media												soil	soil	soil	
Sampled By												EFI	Ransom	EFI	
Sample Date												1/12/2021	1/12/2021	1/12/2021	
Sample Depth (feet)												5-10	0.5-2.5	0-2.5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		661760	L2101571-05	661757
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100	--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	--	29.9	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	--	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	--	95.1	--
Asbestos (%)													ND	--	ND
NOTES:															
1. BRL = Not detected above the lab reporting limits shown in parenthesis.															
2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable															
3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting.															
6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste															
7. <u>Boldface/Shaded/Italics/Underlined</u> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill															
8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-8	TP-8	TP-8	
Media												soil	soil	debris	
Sampled By												Ransom	EFI	EFI	
Sample Date												1/12/2021	1/12/2021	1/12/2021	
Sample Depth (feet)												2.5-5.0	2.5-5	2.5-5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101571-06	661758	662521-24
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100		--	--	--
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	56.3	--	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	--	--	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	92.8	--	--
Asbestos (%)													--	ND	ND
NOTES:															
1. BRL = Not detected above the lab reporting limits shown in parenthesis.															
2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable															
3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting.															
6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste															
7. <i>Boldface/Shaded/Italics/Underlined</i> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill															
8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

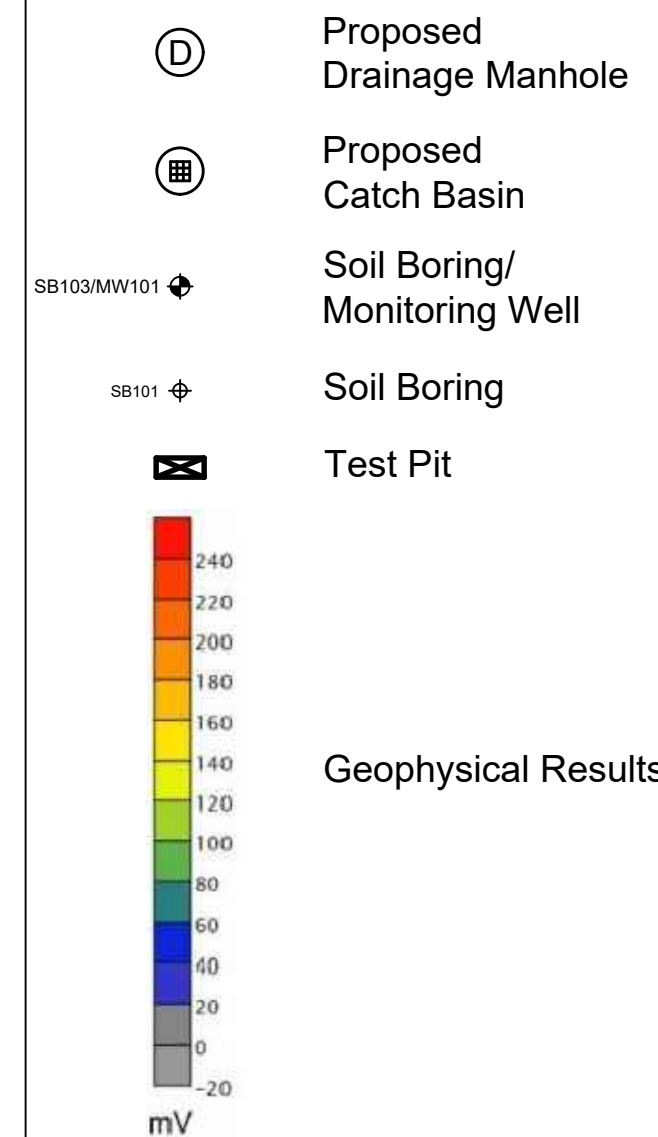
TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification	Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards								COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-9	TP-9	TP-9	
Media												soil	soil	debris	
Sampled By												Ransom	EFI	EFI	
Sample Date												1/12/2021	1/12/2021	1/12/2021	
Sample Depth (feet)												0.5-2.5	0-2.0	0-2	
Lab ID Number	RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101571-07	661755	662512-13	
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~					
Total VOCs		~	~	~	~	~	~	~	100	100		--	--	--	
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	2000	1000	600	895	--	--	
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	None	None	~	6.37	--	--	
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	--	93.8	--	--	
Asbestos (%)													--	ND	ND
NOTES:															
1. BRL = Not detected above the lab reporting limits shown in parenthesis.															
2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable															
3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting.															
6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste															
7. <u>Boldface/Shaded/Italics/Underlined</u> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill															
8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-9	TP-9	TP-9	
Media												soil	soil	debris	
Sampled By												Ransom	EFI	EFI	
Sample Date												1/12/2021	1/12/2021	1/12/2021	
Sample Depth (feet)												2.5-5.0	2.5-5.0	2.5-5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101571-08	661756	662514-21
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100		--	--	--
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	129	--	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	0.577	--	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	91.1	--	--
Asbestos (%)													--	ND	ND
NOTES:															
1. BRL = Not detected above the lab reporting limits shown in parenthesis.															
2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable															
3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting.															
6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste															
7. <i>Boldface/Shaded/Italics/Underlined</i> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill															
8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:		SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS													
		Test Pit Excavation													
		Parking Lots													
		Parcels 109-054/055 and 109-044													
		Brockton, Massachusetts													
Sample Identification		Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards							COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials	TP-10	TP-10	TP-10	
Media												soil	debris	soil	
Sampled By												Ransom	EFI	EFI	
Sample Date												1/12/2021	1/12/2021	1/12/2021	
Sample Depth (feet)												0.5-2.5	0-2	0-2.5	
Lab ID Number		RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101571-09	662506-11	661753
Volatile Organic Compounds (VOCs)		Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)		VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~				
Total VOCs		~	~	~	~	~	~	~	~	100	100		--	--	--
Resource Conservation and Recovery Act (RCRA) Metals		Concentrations in milligrams per kilogram (mg/kg)													
Lead		200	200	200	600	600	600	600	6,000	2000	1000	600	<u>10,100</u>	<u>13,130</u>	--
TCLP Lead (concentrations in milligrams per liter [mg/L])		~	~	~	~	~	~	~	~	None	None	~	78.3	--	--
Other Analyses															
Total Solids (%)		~	~	~	~	~	~	~	~	~	~	--	92.1	--	--
Asbestos (%)													--	ND	ND
NOTES:															
1. BRL = Not detected above the lab reporting limits shown in parenthesis.															
2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable															
3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard.															
4. NI-=Not Ignitable; ND= None Detected															
5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting.															
6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste															
7. <u>Boldface/Shaded/Italics/Underlined</u> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill															
8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)															

TABLE 1:	SUMMARY OF SOIL ANALYTICAL RESULTS-LEAD AND ASBESTOS Test Pit Excavation Parking Lots Parcels 109-054/055 and 109-044 Brockton, Massachusetts												
Sample Identification	Massachusetts Contingency Plan Reportable Concentrations and Method 1 Soil Standards								COMM-97 Reuse Levels- Massachusetts Landfills		MassDEP Background Levels- Fill Materials		TP-10
Media													soil
Sampled By													Ransom
Sample Date													1/12/2021
Sample Depth (feet)													2.5-5.0
Lab ID Number	RCS-1	S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	S-3/GW-2	S-3/GW-3	UCL	Lined Landfills	Unlined Landfills		L2101571-10	
Volatile Organic Compounds (VOCs)													
Concentrations in milligrams per kilogram (mg/kg)													
all analyzed VOCs BRL (unless listed below)	VBC	VBC	VBC	VBC	VBC	VBC	VBC	VBC	~	~			
Total VOCs	~	~	~	~	~	~	~	~	100	100		--	
Resource Conservation and Recovery Act (RCRA) Metals													
Concentrations in milligrams per kilogram (mg/kg)													
Lead	200	200	200	600	600	600	600	6,000	2000	1000	600	366	
TCLP Lead (concentrations in milligrams per liter [mg/L])	~	~	~	~	~	~	~	~	None	None	~	9.55	
Other Analyses													
Total Solids (%)	~	~	~	~	~	~	~	~	~	~	--	90.2	
Asbestos (%)												--	
NOTES: 1. BRL = Not detected above the lab reporting limits shown in parenthesis. 2. ~ = No Method 1 Standard or Upper Concentration Limit (UCL)available; "-"= Not Applicable 3. Boldface/Shaded values exceed the MCP Reportable Concentrations (RCs) and/or Cleanup Standard. 4. NI-=Not Ignitable; ND= None Detected 5. Boldface/Shaded/Italics: Contaminant is attributable to anthropogenic fill and exempt from MassDEP reporting. 6. Boldface TCLP lead values exceed 5.0 mg/L and characterized as hazardous waste 7. <u>Boldface/Shaded/Italics/Underlined</u> : Lead concentrations exceeding MassDEP Background Levels and MCP UCLs attributable to fill materials and co-mingled buried C&D debris (anthropogenic fill 8. Suspect transit shingles visually identified at TP-5 and TP-6 (0-5 FT)													

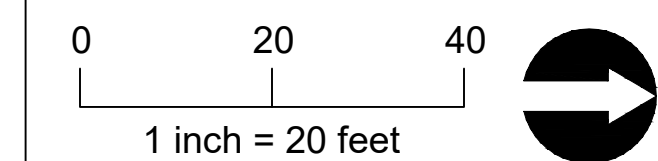
Legend & Notes



Notes:

- Sources: BCS Group. New Street Roadway Construction & Petronelli Way Improvements. 11/28/2018., TPI Environmental. Geophysical Survey - Lot 109-044, Brockton, MA. 3/30/20., & Geophysical Survey - Lots 109-054 and 1095-055, Brockton, MA. 3/30/20.
- Some features are approximate in location and scale.
- This plan has been prepared for The City of Brockton. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.
- Color contoured data indicate relative EM 61 response, i.e. significant buried metallic structures. The EM survey was conducted throughout accessible areas, as indicated by black borderline.

Scale and Orientation



Prepared For

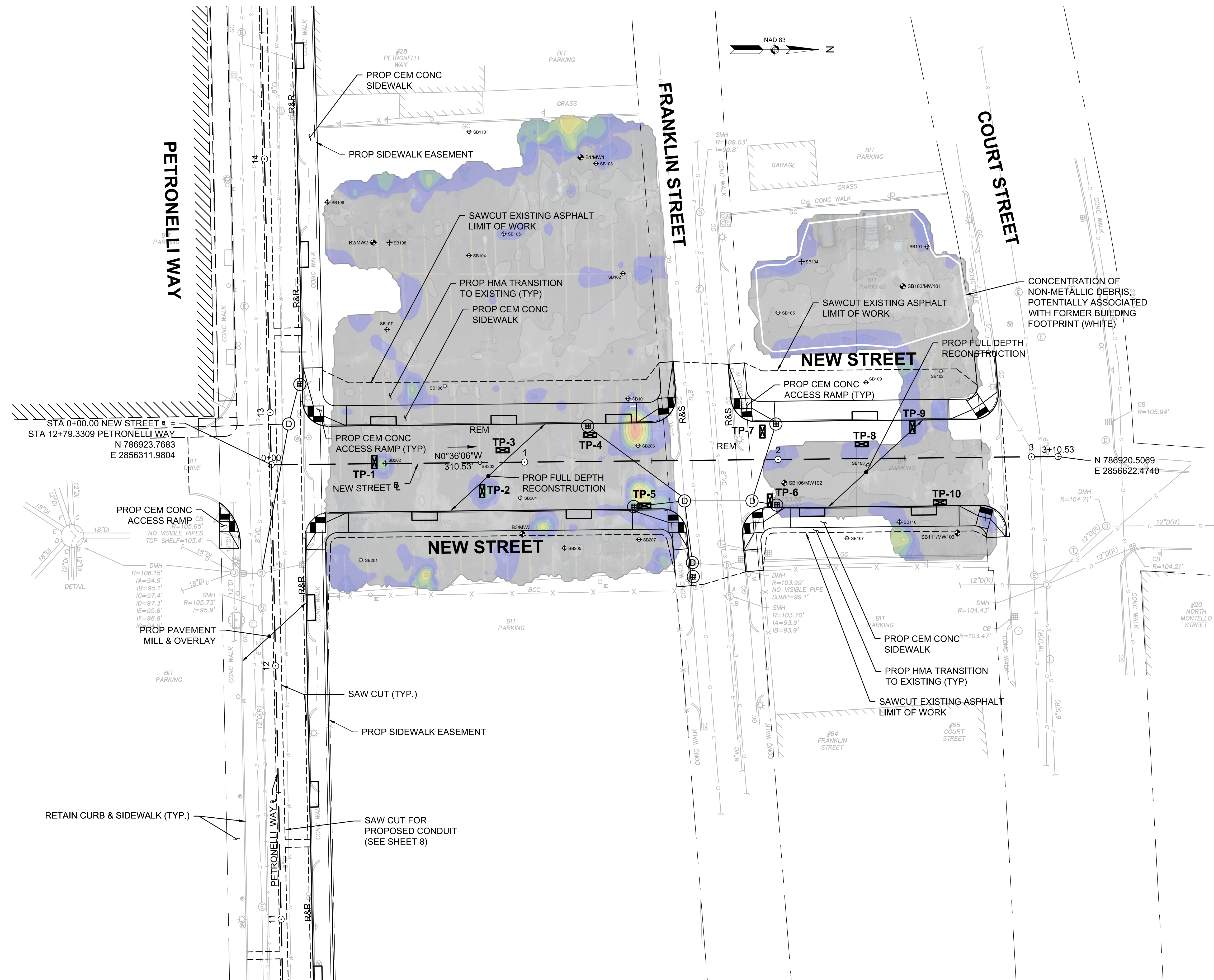
City of Brockton
45 School Street
Brockton, Massachusetts

Site Address

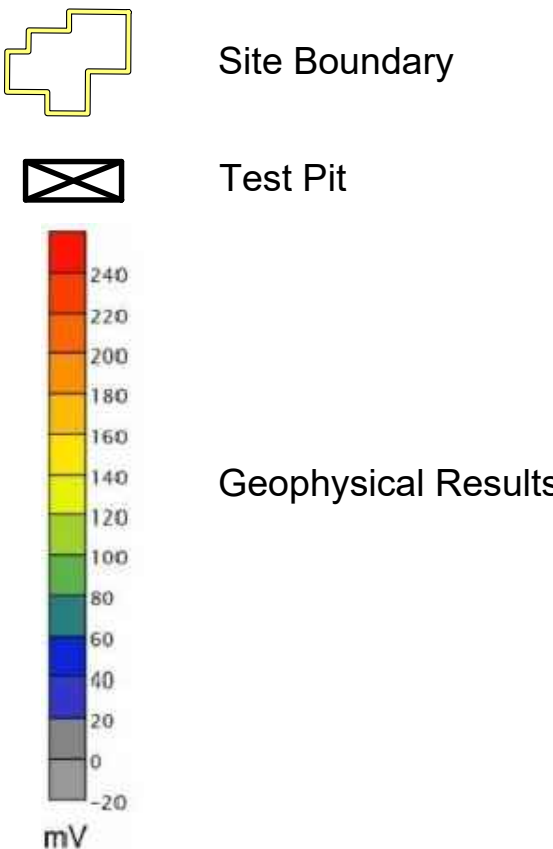
Parcels: 109-044, 109-054 & 109-055
Brockton, Massachusetts

201.02017.001 | Mar 2021

Figure 1
Test Pit Locations and Proposed New Road

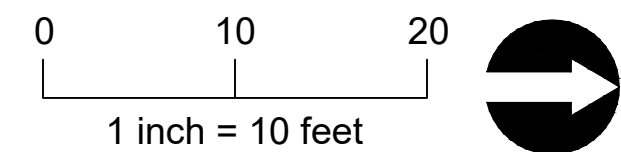


Legend & Notes



- Notes:
- Sources: BCS Group. New Street Roadway Construction & Petronelli Way Improvements. 11/28/2018., TPI Environmental. Geophysical Survey - Lot 109-044, Brockton, MA. 3/30/20., & Geophysical Survey - Lots 109-054 and 1095-055, Brockton, MA. 3/30/20.
 - Some features are approximate in location and scale.
 - This plan has been prepared for The City of Brockton. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.
 - Color contoured data indicate relative EM 61 response, i.e. significant buried metallic structures. The EM survey was conducted throughout accessible areas, as indicated by black borderline.

Scale and Orientation



Prepared For

City of Brockton
45 School Street
Brockton, Massachusetts

Site Address

Parcels: 109-044, 109-054 & 109-055
Brockton, Massachusetts

201.02017.001 | Mar 2021

Figure 2
Test Pit Locations



APPENDIX A

Test Pit Logs

Test Pit Excavation and Waste Characterization

BPA Lot D (Parcels 109-054 and 109-055) and BPA Parking Lot E (Parcel 109-044)

Franklin Street

Brockton, Massachusetts

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-1			
Location: Parcels 109-054-109-055		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Capacity/Reach: 10 FT		Time Started: 09:49 Time Completed: 10:39	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/11/2020	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-2.5	S-1	0.5-1.0	Medium brown medium sand and cobbles. No odor Refusal at 1.5 feet, due to underlying layer of asphalt
Pit Dimensions (Feet) Length <u> 5 </u> Width <u> 2 </u> Depth <u> 1.5 </u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-2			
Location: Parcels 109-054-109-055		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 09:49 Time Completed: 10:39	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/11/2020	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-2.5	S-1	0.5-2.5	Medium brown medium sand and fill (brock, cobbles, asphalt, clinkers). No odor
2.5-4.5	S-2	2.5-4.5	Medium brown medium sand and fill (brock, cobbles > 6 in. diameter, asphalt, clinkers). No odor
Pit Dimensions (Feet) Length <u> 5 </u> Width <u> 2 </u> Depth <u> 4.5 </u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-3			
Location: Parcels 109-054-109-055		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 10:40 Time Completed: 10:25	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/11/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-2.5	S-1	0.5-2.5	Medium brown medium sand, fill (bricks, asphalt, cobbles). No odor
2.5-5.0	S-2	2.5-5.0	Medium brown to dark brown and black medium sand, fill (bricks, asphalt, cobbles). No odor
Pit Dimensions (Feet) Length <u> 5 </u> Width <u> 2 </u> Depth <u> 5 </u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-4			
Location: Parcels 109-054-109-055		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 12:12 Time Completed: 12:45	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/11/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-5.0	S-1	0.5-5.0	Light brown to medium brown and orange medium to fine sand, fill (bricks, asphalt, cobbles, white fragment debris @ 2-3 FT). No odor
8.0-8.5	S-2	8.0-8.5	Light brown, orange fine to medium sand, suspect black organic material. No odor
5.0-9.5	S-3	5.0-9.5	Light brown fine to medium sand. No odor
Pit Dimensions (Feet) Length <u>10</u> Width <u>2</u> Depth <u>9.5</u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-5			
Location: Parcels 109-054-109-055		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 13:03 Time Completed: 13:20	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/11/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-5.0	S-1	0.5-5.0	Medium brown medium sand and fill (plastic, brick, cobbles concrete, suspect black floor tiles @ 3 FT). No odor
			Excavation stopped at 5 feet, due to cave-in of soils.
Pit Dimensions (Feet) Length <u>10</u> Width <u>2</u> Depth <u>5</u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-6			
Location: Parcels 109-044		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 12:13 Time Completed: 12:30	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/12/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-5.0	S-1	0.5-5.0	Medium brown fine to medium sand and fill (brick, cobbles). No odor
5.0-9.0	S-2	5.0-9.0	Medium brown and orange-brown fine to medium sand and silt
Pit Dimensions (Feet) Length <u>10</u> Width <u>2</u> Depth <u>9</u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-7			
Location: Parcels 109-044		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 11:23 Time Completed: 11:45	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/12/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-5.0	S-1	0.5-5.0	Medium brown medium sand and fill (brick, asphalt, cobbles). No odor
5.0-9.0	S-2	5.0-9.0	Medium brown fine to medium sand and gray silt, clayey silt
Pit Dimensions (Feet) Length <u>10</u> Width <u>2</u> Depth <u>9</u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-8			
Location: Parcels 109-044		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 10:57 Time Completed: 11:20	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/12/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-2.5	S-1	0.5-2.5	Medium brown to dark brown medium to fine sand and fill (brick, asphalt). No odor
2.5-5.0	S-2	2.5-5.0	Medium brown medium sand and fill (brick, coal). No odor
Pit Dimensions (Feet) Length <u> 5 </u> Width <u> 2 </u> Depth <u> 5 </u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-9			
Location: Parcels 109-044		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 10:35 Time Completed: 10:50	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/12/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-2.5	S-1	0.5-2.5	Medium brown medium sand and fill (cobbles, white debris fragments). No odor
2.5-5.0	S-2	2.5-5.0	Medium brown medium sand and fill (cobbles, white debris fragments, suspect countertop/tiles). No odor
Pit Dimensions (Feet) Length <u> 5 </u> Width <u> 2 </u> Depth <u> 5 </u>			Remarks: Test pit backfilled with additional clean fill and compacted

TEST PIT LOG

Project: Brockton		Project #: 201.02017.001	
TEST PIT IDENTIFICATION: TP-10			
Location: Parcels 109-044		Ground Elevation:	
Client: City of Brockton		Datum: NA	
Contractor: Trident Environmental		Operator: Jack Near	
Equipment: CAT 305 Excavator		Samples Collected <u>X</u> Yes <u> </u> No	
Capacity/Reach: 10 FT		Time Started: 09:42 Time Completed: 10:00	
Weather: Partly Sunny-20-30 degrees			
Logged by: Tracey Costa		Date: 1/12/2021	
Checked by: TJS		Date: 1/28/2021	
TEST PIT INFORMATION			
Depth of Stratum Change Feet	Sample No. and Type	Sample Depth Feet	Soil Description
0-0.5	-	-	Asphalt
0.5-2.5	S-1	0.5-2.5	Medium brown medium sand and fill (brick, cobbles concrete, white debris fragments, suspect roof materials > 6-in. dia). No odor
2.5-5.0	S-2	2.5-5.0	Medium brown medium sand and cobbles (>50%)
Pit Dimensions (Feet) Length <u> 5 </u> Width <u> 2 </u> Depth <u> 5 </u>			Remarks: Test pit backfilled with additional clean fill and compacted

APPENDIX B

Photographic Log

Test Pit Excavation and Waste Characterization

BPA Lot D (Parcels 109-054 and 109-055) and BPA Parking Lot E (Parcel 109-044)

Franklin Street

Brockton, Massachusetts

Photograph Log



Photograph 1: Test Pit Excavation



Photograph 2: White debris observed at TP-4



Photograph 3: Suspect organic soils observed at TP-4



Photograph 4: Shingles observed at TP-10



Photograph 5: Cobbles observed at TP-10



Photograph 6: Cobbles observed at TP-9

Photograph Log



Photograph 7: Test Pit compacting



Photograph 8: View of backfilled test pits

APPENDIX C

Laboratory Analytical Reports

Test Pit Excavation and Waste Characterization

BPA Lot D (Parcels 109-054 and 109-055) and BPA Parking Lot E (Parcel 109-044)

Franklin Street

Brockton, Massachusetts



ANALYTICAL REPORT

Lab Number:	L2101367
Client:	Ransom Consulting, Inc. 60 Valley Street Building F, Suite 106 Providence, RI 02909
ATTN:	Tracey Costa
Phone:	(401) 433-2160
Project Name:	BROCKTON
Project Number:	201.02017.001
Report Date:	01/18/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2101367-01	TP-1 (0.5-1.5 FT)	SOIL	PARCELS 109-54/SS	01/11/21 09:30	01/11/21
L2101367-02	TP-2 (0.5-2.5 FT)	SOIL	PARCELS 109-54/SS	01/11/21 09:55	01/11/21
L2101367-03	TP-2 (2.5-4.5 FT)	SOIL	PARCELS 109-54/SS	01/11/21 10:05	01/11/21
L2101367-04	TP-3 (0.5-2.5 FT)	SOIL	PARCELS 109-54/SS	01/11/21 11:15	01/11/21
L2101367-05	TP-3 (2.5-5.0 FT)	SOIL	PARCELS 109-54/SS	01/11/21 11:25	01/11/21
L2101367-06	TP-4 (0.5-5.0 FT)	SOIL	PARCELS 109-54/SS	01/11/21 12:30	01/11/21
L2101367-07	TP-4 (5.0-9.5 FT)	SOIL	PARCELS 109-54/SS	01/11/21 12:45	01/11/21
L2101367-08	TP-4 (8 FT)	SOIL	PARCELS 109-54/SS	01/11/21 12:40	01/11/21
L2101367-09	TP-5 (0.5-5.0 FT)	SOIL	PARCELS 109-54/SS	01/11/21 13:20	01/11/21
L2101367-10	COMP-1 (0.5-5.0 FT)	SOIL	PARCELS 109-54/SS	01/11/21 13:40	01/11/21
L2101367-11	COMP-2 (5.0-9.5 FT)	SOIL	PARCELS 109-54/SS	01/11/21 13:50	01/11/21

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

The analyses performed were specified by the client.

L2101367-01: The sample identified as "TP-1 (0.5-1.0 FT)" on the chain of custody was identified as "TP-1 (0.5-1.5 FT)" on the container label. At the client's request, the sample is reported as "TP-1 (0.5-1.5 FT)".

In reference to question H:

A Matrix Spike was not submitted for the analysis of Total Metals.

Volatile Organics

In reference to question H:

The initial calibration, associated with L2101367-10 and -11, did not meet the method required minimum response factor on the lowest calibration standard for tetrahydrofuran (0.0468), 4-methyl-2-pentanone (0.0655), and 1,4-dioxane (0.0016), as well as the average response factor for 2-butanone, 4-methyl-2-pentanone, and 1,4-dioxane.

The continuing calibration standard, associated with L2101367-10 and -11, is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

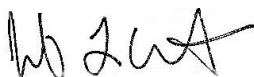
Non-MCP Related Narratives

Sample Receipt

L2101367-08: The sample was received in an inappropriate container for the TPH - Gasoline Range Organics analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Jennifer L Clements

Title: Technical Director/Representative

Date: 01/18/21

QC OUTLIER SUMMARY REPORT

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
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There are no QC Outliers associated with this report.

ORGANICS

VOLATILES

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8260C
Analytical Date: 01/15/21 09:35
Analyst: MV
Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	2.4	--	1
1,1-Dichloroethane	ND		ug/kg	0.49	--	1
Chloroform	ND		ug/kg	0.74	--	1
Carbon tetrachloride	ND		ug/kg	0.49	--	1
1,2-Dichloropropane	ND		ug/kg	0.49	--	1
Dibromochloromethane	ND		ug/kg	0.49	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.49	--	1
Tetrachloroethene	ND		ug/kg	0.24	--	1
Chlorobenzene	ND		ug/kg	0.24	--	1
Trichlorofluoromethane	ND		ug/kg	2.0	--	1
1,2-Dichloroethane	ND		ug/kg	0.49	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.24	--	1
Bromodichloromethane	ND		ug/kg	0.24	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.49	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.24	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.24	--	1
1,1-Dichloropropene	ND		ug/kg	0.24	--	1
Bromoform	ND		ug/kg	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.24	--	1
Benzene	ND		ug/kg	0.24	--	1
Toluene	ND		ug/kg	0.49	--	1
Ethylbenzene	ND		ug/kg	0.49	--	1
Chloromethane	ND		ug/kg	2.0	--	1
Bromomethane	ND		ug/kg	0.98	--	1
Vinyl chloride	ND		ug/kg	0.49	--	1
Chloroethane	ND		ug/kg	0.98	--	1
1,1-Dichloroethene	ND		ug/kg	0.49	--	1
trans-1,2-Dichloroethene	ND		ug/kg	0.74	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.24	--	1
1,2-Dichlorobenzene	ND		ug/kg	0.98	--	1
1,3-Dichlorobenzene	ND		ug/kg	0.98	--	1
1,4-Dichlorobenzene	ND		ug/kg	0.98	--	1
Methyl tert butyl ether	ND		ug/kg	0.98	--	1
p/m-Xylene	ND		ug/kg	0.98	--	1
o-Xylene	ND		ug/kg	0.49	--	1
Xylenes, Total	ND		ug/kg	0.49	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.49	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.49	--	1
Dibromomethane	ND		ug/kg	0.98	--	1
1,2,3-Trichloropropane	ND		ug/kg	0.98	--	1
Styrene	ND		ug/kg	0.49	--	1
Dichlorodifluoromethane	ND		ug/kg	4.9	--	1
Acetone	ND		ug/kg	12	--	1
Carbon disulfide	ND		ug/kg	4.9	--	1
Methyl ethyl ketone	ND		ug/kg	4.9	--	1
Methyl isobutyl ketone	ND		ug/kg	4.9	--	1
2-Hexanone	ND		ug/kg	4.9	--	1
Bromochloromethane	ND		ug/kg	0.98	--	1
Tetrahydrofuran	ND		ug/kg	2.0	--	1
2,2-Dichloropropane	ND		ug/kg	0.98	--	1
1,2-Dibromoethane	ND		ug/kg	0.49	--	1
1,3-Dichloropropane	ND		ug/kg	0.98	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.24	--	1
Bromobenzene	ND		ug/kg	0.98	--	1
n-Butylbenzene	ND		ug/kg	0.49	--	1
sec-Butylbenzene	ND		ug/kg	0.49	--	1
tert-Butylbenzene	ND		ug/kg	0.98	--	1
o-Chlorotoluene	ND		ug/kg	0.98	--	1
p-Chlorotoluene	ND		ug/kg	0.98	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.5	--	1
Hexachlorobutadiene	ND		ug/kg	2.0	--	1
Isopropylbenzene	ND		ug/kg	0.49	--	1
p-Isopropyltoluene	ND		ug/kg	0.49	--	1
Naphthalene	ND		ug/kg	2.0	--	1
n-Propylbenzene	ND		ug/kg	0.49	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	0.98	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	0.98	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	0.98	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	0.98	--	1
Diethyl ether	ND		ug/kg	0.98	--	1
Diisopropyl Ether	ND		ug/kg	0.98	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/kg	0.98	--	1
Tertiary-Amyl Methyl Ether	ND		ug/kg	0.98	--	1
1,4-Dioxane	ND		ug/kg	39	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	97		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8260C
Analytical Date: 01/15/21 10:00
Analyst: JC
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.4	--	1
1,1-Dichloroethane	ND		ug/kg	0.68	--	1
Chloroform	ND		ug/kg	1.0	--	1
Carbon tetrachloride	ND		ug/kg	0.68	--	1
1,2-Dichloropropane	ND		ug/kg	0.68	--	1
Dibromochloromethane	ND		ug/kg	0.68	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.68	--	1
Tetrachloroethene	ND		ug/kg	0.34	--	1
Chlorobenzene	ND		ug/kg	0.34	--	1
Trichlorofluoromethane	ND		ug/kg	2.7	--	1
1,2-Dichloroethane	ND		ug/kg	0.68	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.34	--	1
Bromodichloromethane	ND		ug/kg	0.34	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.68	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.34	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.34	--	1
1,1-Dichloropropene	ND		ug/kg	0.34	--	1
Bromoform	ND		ug/kg	2.7	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.34	--	1
Benzene	ND		ug/kg	0.34	--	1
Toluene	ND		ug/kg	0.68	--	1
Ethylbenzene	ND		ug/kg	0.68	--	1
Chloromethane	ND		ug/kg	2.7	--	1
Bromomethane	ND		ug/kg	1.4	--	1
Vinyl chloride	ND		ug/kg	0.68	--	1
Chloroethane	ND		ug/kg	1.4	--	1
1,1-Dichloroethene	ND		ug/kg	0.68	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.0	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.34	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.4	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.4	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.4	--	1
Methyl tert butyl ether	ND		ug/kg	1.4	--	1
p/m-Xylene	ND		ug/kg	1.4	--	1
o-Xylene	ND		ug/kg	0.68	--	1
Xylenes, Total	ND		ug/kg	0.68	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.68	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.68	--	1
Dibromomethane	ND		ug/kg	1.4	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.4	--	1
Styrene	ND		ug/kg	0.68	--	1
Dichlorodifluoromethane	ND		ug/kg	6.8	--	1
Acetone	ND		ug/kg	17	--	1
Carbon disulfide	ND		ug/kg	6.8	--	1
Methyl ethyl ketone	ND		ug/kg	6.8	--	1
Methyl isobutyl ketone	ND		ug/kg	6.8	--	1
2-Hexanone	ND		ug/kg	6.8	--	1
Bromochloromethane	ND		ug/kg	1.4	--	1
Tetrahydrofuran	ND		ug/kg	2.7	--	1
2,2-Dichloropropane	ND		ug/kg	1.4	--	1
1,2-Dibromoethane	ND		ug/kg	0.68	--	1
1,3-Dichloropropane	ND		ug/kg	1.4	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.34	--	1
Bromobenzene	ND		ug/kg	1.4	--	1
n-Butylbenzene	ND		ug/kg	0.68	--	1
sec-Butylbenzene	ND		ug/kg	0.68	--	1
tert-Butylbenzene	ND		ug/kg	1.4	--	1
o-Chlorotoluene	ND		ug/kg	1.4	--	1
p-Chlorotoluene	ND		ug/kg	1.4	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.0	--	1
Hexachlorobutadiene	ND		ug/kg	2.7	--	1
Isopropylbenzene	ND		ug/kg	0.68	--	1
p-Isopropyltoluene	ND		ug/kg	0.68	--	1
Naphthalene	ND		ug/kg	2.7	--	1
n-Propylbenzene	ND		ug/kg	0.68	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	1.4	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.4	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.4	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.4	--	1
Diethyl ether	ND		ug/kg	1.4	--	1
Diisopropyl Ether	ND		ug/kg	1.4	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/kg	1.4	--	1
Tertiary-Amyl Methyl Ether	ND		ug/kg	1.4	--	1
1,4-Dioxane	ND		ug/kg	54	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	101		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 01/15/21 08:18
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10-11 Batch: WG1455401-5					
Methylene chloride	ND		ug/kg	5.0	--
1,1-Dichloroethane	ND		ug/kg	1.0	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	1.0	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.0	--
Tetrachloroethene	ND		ug/kg	0.50	--
Chlorobenzene	ND		ug/kg	0.50	--
Trichlorofluoromethane	ND		ug/kg	4.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	0.50	--
Bromodichloromethane	ND		ug/kg	0.50	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	0.50	--
1,3-Dichloropropene, Total	ND		ug/kg	0.50	--
1,1-Dichloropropene	ND		ug/kg	0.50	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	--
Benzene	ND		ug/kg	0.50	--
Toluene	ND		ug/kg	1.0	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	4.0	--
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	1.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--
Trichloroethene	ND		ug/kg	0.50	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C
 Analytical Date: 01/15/21 08:18
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10-11 Batch: WG1455401-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	--
1,3-Dichlorobenzene	ND		ug/kg	2.0	--
1,4-Dichlorobenzene	ND		ug/kg	2.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	1.0	--
Xylenes, Total	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	2.0	--
1,2,3-Trichloropropane	ND		ug/kg	2.0	--
Styrene	ND		ug/kg	1.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	25	--
Carbon disulfide	ND		ug/kg	10	--
Methyl ethyl ketone	ND		ug/kg	10	--
Methyl isobutyl ketone	ND		ug/kg	10	--
2-Hexanone	ND		ug/kg	10	--
Bromochloromethane	ND		ug/kg	2.0	--
Tetrahydrofuran	ND		ug/kg	4.0	--
2,2-Dichloropropane	ND		ug/kg	2.0	--
1,2-Dibromoethane	ND		ug/kg	1.0	--
1,3-Dichloropropane	ND		ug/kg	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	--
Bromobenzene	ND		ug/kg	2.0	--
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	2.0	--
o-Chlorotoluene	ND		ug/kg	2.0	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 01/15/21 08:18
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10-11 Batch: WG1455401-5					
p-Chlorotoluene	ND		ug/kg	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	--
Hexachlorobutadiene	ND		ug/kg	4.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	4.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	--
Diethyl ether	ND		ug/kg	2.0	--
Diisopropyl Ether	ND		ug/kg	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	2.0	--
1,4-Dioxane	ND		ug/kg	80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	94		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10-11 Batch: WG1455401-3 WG1455401-4								
Methylene chloride	88		82		70-130	7		20
1,1-Dichloroethane	92		83		70-130	10		20
Chloroform	91		83		70-130	9		20
Carbon tetrachloride	100		87		70-130	14		20
1,2-Dichloropropane	90		82		70-130	9		20
Dibromochloromethane	81		76		70-130	6		20
1,1,2-Trichloroethane	82		79		70-130	4		20
Tetrachloroethene	85		75		70-130	13		20
Chlorobenzene	91		84		70-130	8		20
Trichlorofluoromethane	100		86		70-130	15		20
1,2-Dichloroethane	90		86		70-130	5		20
1,1,1-Trichloroethane	96		85		70-130	12		20
Bromodichloromethane	88		82		70-130	7		20
trans-1,3-Dichloropropene	85		81		70-130	5		20
cis-1,3-Dichloropropene	91		84		70-130	8		20
1,1-Dichloropropene	98		85		70-130	14		20
Bromoform	80		75		70-130	6		20
1,1,2,2-Tetrachloroethane	75		72		70-130	4		20
Benzene	88		80		70-130	10		20
Toluene	85		76		70-130	11		20
Ethylbenzene	85		76		70-130	11		20
Chloromethane	87		77		70-130	12		20
Bromomethane	102		94		70-130	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10-11 Batch: WG1455401-3 WG1455401-4								
Vinyl chloride	93		82		70-130	13		20
Chloroethane	87		78		70-130	11		20
1,1-Dichloroethene	99		87		70-130	13		20
trans-1,2-Dichloroethene	98		86		70-130	13		20
Trichloroethene	93		83		70-130	11		20
1,2-Dichlorobenzene	79		73		70-130	8		20
1,3-Dichlorobenzene	80		74		70-130	8		20
1,4-Dichlorobenzene	78		72		70-130	8		20
Methyl tert butyl ether	91		88		70-130	3		20
p/m-Xylene	83		75		70-130	10		20
o-Xylene	81		74		70-130	9		20
cis-1,2-Dichloroethene	92		83		70-130	10		20
Dibromomethane	92		88		70-130	4		20
1,2,3-Trichloropropane	76		73		70-130	4		20
Styrene	81		74		70-130	9		20
Dichlorodifluoromethane	94		80		70-130	16		20
Acetone	92		90		70-130	2		20
Carbon disulfide	89		78		70-130	13		20
Methyl ethyl ketone	83		80		70-130	4		20
Methyl isobutyl ketone	86		82		70-130	5		20
2-Hexanone	78		76		70-130	3		20
Bromochloromethane	92		87		70-130	6		20
Tetrahydrofuran	101		100		70-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10-11 Batch: WG1455401-3 WG1455401-4								
2,2-Dichloropropane	98		85		70-130	14		20
1,2-Dibromoethane	83		80		70-130	4		20
1,3-Dichloropropane	83		79		70-130	5		20
1,1,1,2-Tetrachloroethane	79		74		70-130	7		20
Bromobenzene	78		72		70-130	8		20
n-Butylbenzene	83		74		70-130	11		20
sec-Butylbenzene	83		74		70-130	11		20
tert-Butylbenzene	83		74		70-130	11		20
o-Chlorotoluene	80		72		70-130	11		20
p-Chlorotoluene	80		72		70-130	11		20
1,2-Dibromo-3-chloropropane	85		81		70-130	5		20
Hexachlorobutadiene	81		73		70-130	10		20
Isopropylbenzene	84		74		70-130	13		20
p-Isopropyltoluene	84		75		70-130	11		20
Naphthalene	77		72		70-130	7		20
n-Propylbenzene	84		74		70-130	13		20
1,2,3-Trichlorobenzene	77		72		70-130	7		20
1,2,4-Trichlorobenzene	80		72		70-130	11		20
1,3,5-Trimethylbenzene	82		74		70-130	10		20
1,2,4-Trimethylbenzene	82		74		70-130	10		20
Diethyl ether	91		86		70-130	6		20
Diisopropyl Ether	89		83		70-130	7		20
Ethyl-Tert-Butyl-Ether	89		85		70-130	5		20

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10-11 Batch: WG1455401-3 WG1455401-4								
Tertiary-Amyl Methyl Ether	90		85		70-130	6		20
1,4-Dioxane	92		103		70-130	11		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	94		95		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	97		97		70-130

SEMIVOLATILES

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 01/14/21 15:47
Analyst: ALS
Percent Solids: 92%

Extraction Method: EPA 3546
Extraction Date: 01/13/21 09:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Acenaphthene	430		ug/kg	140	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	--	1
Hexachlorobenzene	ND		ug/kg	76	--	1
Bis(2-chloroethyl)ether	ND		ug/kg	76	--	1
2-Chloronaphthalene	ND		ug/kg	180	--	1
1,2-Dichlorobenzene	ND		ug/kg	180	--	1
1,3-Dichlorobenzene	ND		ug/kg	180	--	1
1,4-Dichlorobenzene	ND		ug/kg	76	--	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	--	1
2,4-Dinitrotoluene	ND		ug/kg	76	--	1
2,6-Dinitrotoluene	ND		ug/kg	180	--	1
Azobenzene	ND		ug/kg	180	--	1
Fluoranthene	5700		ug/kg	110	--	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	--	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	76	--	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	--	1
Hexachlorobutadiene	ND		ug/kg	180	--	1
Hexachloroethane	ND		ug/kg	76	--	1
Isophorone	ND		ug/kg	160	--	1
Naphthalene	390		ug/kg	180	--	1
Nitrobenzene	ND		ug/kg	160	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	--	1
Butyl benzyl phthalate	ND		ug/kg	180	--	1
Di-n-butylphthalate	ND		ug/kg	180	--	1
Di-n-octylphthalate	ND		ug/kg	180	--	1
Diethyl phthalate	ND		ug/kg	180	--	1
Dimethyl phthalate	ND		ug/kg	76	--	1
Benzo(a)anthracene	3600		ug/kg	110	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Benzo(a)pyrene	3100		ug/kg	140	--	1
Benzo(b)fluoranthene	3800		ug/kg	110	--	1
Benzo(k)fluoranthene	1000		ug/kg	110	--	1
Chrysene	3100		ug/kg	110	--	1
Acenaphthylene	640		ug/kg	140	--	1
Anthracene	1400		ug/kg	110	--	1
Benzo(ghi)perylene	1900		ug/kg	140	--	1
Fluorene	470		ug/kg	180	--	1
Phenanthrene	4800		ug/kg	110	--	1
Dibenzo(a,h)anthracene	490		ug/kg	76	--	1
Indeno(1,2,3-cd)pyrene	1900		ug/kg	140	--	1
Pyrene	5300		ug/kg	110	--	1
Aniline	ND		ug/kg	220	--	1
4-Chloroaniline	ND		ug/kg	180	--	1
Dibenzofuran	350		ug/kg	180	--	1
2-Methylnaphthalene	160		ug/kg	76	--	1
Acetophenone	ND		ug/kg	180	--	1
2,4,6-Trichlorophenol	ND		ug/kg	76	--	1
2-Chlorophenol	ND		ug/kg	76	--	1
2,4-Dichlorophenol	ND		ug/kg	76	--	1
2,4-Dimethylphenol	ND		ug/kg	76	--	1
2-Nitrophenol	ND		ug/kg	390	--	1
4-Nitrophenol	ND		ug/kg	250	--	1
2,4-Dinitrophenol	ND		ug/kg	870	--	1
Pentachlorophenol	ND		ug/kg	360	--	1
Phenol	ND		ug/kg	180	--	1
2-Methylphenol	ND		ug/kg	180	--	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	--	1
2,4,5-Trichlorophenol	ND		ug/kg	180	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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MCP Semivolatile Organics - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	72		30-130
Phenol-d6	73		30-130
Nitrobenzene-d5	57		30-130
2-Fluorobiphenyl	81		30-130
2,4,6-Tribromophenol	97		30-130
4-Terphenyl-d14	81		30-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 01/14/21 03:11
Analyst: IM
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 01/13/21 09:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Acenaphthene	ND		ug/kg	150	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	190	--	1
Hexachlorobenzene	ND		ug/kg	80	--	1
Bis(2-chloroethyl)ether	ND		ug/kg	80	--	1
2-Chloronaphthalene	ND		ug/kg	190	--	1
1,2-Dichlorobenzene	ND		ug/kg	190	--	1
1,3-Dichlorobenzene	ND		ug/kg	190	--	1
1,4-Dichlorobenzene	ND		ug/kg	80	--	1
3,3'-Dichlorobenzidine	ND		ug/kg	190	--	1
2,4-Dinitrotoluene	ND		ug/kg	80	--	1
2,6-Dinitrotoluene	ND		ug/kg	190	--	1
Azobenzene	ND		ug/kg	190	--	1
Fluoranthene	910		ug/kg	110	--	1
4-Bromophenyl phenyl ether	ND		ug/kg	190	--	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	80	--	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	--	1
Hexachlorobutadiene	ND		ug/kg	190	--	1
Hexachloroethane	ND		ug/kg	80	--	1
Isophorone	ND		ug/kg	170	--	1
Naphthalene	ND		ug/kg	190	--	1
Nitrobenzene	ND		ug/kg	170	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	190	--	1
Butyl benzyl phthalate	ND		ug/kg	190	--	1
Di-n-butylphthalate	ND		ug/kg	190	--	1
Di-n-octylphthalate	ND		ug/kg	190	--	1
Diethyl phthalate	ND		ug/kg	190	--	1
Dimethyl phthalate	ND		ug/kg	80	--	1
Benzo(a)anthracene	470		ug/kg	110	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Benzo(a)pyrene	480		ug/kg	150	--	1
Benzo(b)fluoranthene	590		ug/kg	110	--	1
Benzo(k)fluoranthene	150		ug/kg	110	--	1
Chrysene	440		ug/kg	110	--	1
Acenaphthylene	ND		ug/kg	150	--	1
Anthracene	ND		ug/kg	110	--	1
Benzo(ghi)perylene	280		ug/kg	150	--	1
Fluorene	ND		ug/kg	190	--	1
Phenanthrene	470		ug/kg	110	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	80	--	1
Indeno(1,2,3-cd)pyrene	290		ug/kg	150	--	1
Pyrene	820		ug/kg	110	--	1
Aniline	ND		ug/kg	230	--	1
4-Chloroaniline	ND		ug/kg	190	--	1
Dibenzofuran	ND		ug/kg	190	--	1
2-Methylnaphthalene	ND		ug/kg	80	--	1
Acetophenone	ND		ug/kg	190	--	1
2,4,6-Trichlorophenol	ND		ug/kg	80	--	1
2-Chlorophenol	ND		ug/kg	80	--	1
2,4-Dichlorophenol	ND		ug/kg	80	--	1
2,4-Dimethylphenol	ND		ug/kg	80	--	1
2-Nitrophenol	ND		ug/kg	410	--	1
4-Nitrophenol	ND		ug/kg	260	--	1
2,4-Dinitrophenol	ND		ug/kg	910	--	1
Pentachlorophenol	ND		ug/kg	380	--	1
Phenol	ND		ug/kg	190	--	1
2-Methylphenol	ND		ug/kg	190	--	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	270	--	1
2,4,5-Trichlorophenol	ND		ug/kg	190	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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MCP Semivolatile Organics - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		30-130
Phenol-d6	70		30-130
Nitrobenzene-d5	66		30-130
2-Fluorobiphenyl	84		30-130
2,4,6-Tribromophenol	105		30-130
4-Terphenyl-d14	92		30-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 01/14/21 00:36
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 01/13/21 09:02

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 10-11 Batch: WG1454459-1					
Acenaphthene	ND		ug/kg	130	--
1,2,4-Trichlorobenzene	ND		ug/kg	160	--
Hexachlorobenzene	ND		ug/kg	70	--
Bis(2-chloroethyl)ether	ND		ug/kg	70	--
2-Chloronaphthalene	ND		ug/kg	160	--
1,2-Dichlorobenzene	ND		ug/kg	160	--
1,3-Dichlorobenzene	ND		ug/kg	160	--
1,4-Dichlorobenzene	ND		ug/kg	70	--
3,3'-Dichlorobenzidine	ND		ug/kg	160	--
2,4-Dinitrotoluene	ND		ug/kg	70	--
2,6-Dinitrotoluene	ND		ug/kg	160	--
Azobenzene	ND		ug/kg	160	--
Fluoranthene	ND		ug/kg	99	--
4-Bromophenyl phenyl ether	ND		ug/kg	160	--
Bis(2-chloroisopropyl)ether	ND		ug/kg	70	--
Bis(2-chloroethoxy)methane	ND		ug/kg	180	--
Hexachlorobutadiene	ND		ug/kg	160	--
Hexachloroethane	ND		ug/kg	70	--
Isophorone	ND		ug/kg	150	--
Naphthalene	ND		ug/kg	160	--
Nitrobenzene	ND		ug/kg	150	--
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	--
Butyl benzyl phthalate	ND		ug/kg	160	--
Di-n-butylphthalate	ND		ug/kg	160	--
Di-n-octylphthalate	ND		ug/kg	160	--
Diethyl phthalate	ND		ug/kg	160	--
Dimethyl phthalate	ND		ug/kg	70	--
Benzo(a)anthracene	ND		ug/kg	99	--
Benzo(a)pyrene	ND		ug/kg	130	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 01/14/21 00:36
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 01/13/21 09:02

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 10-11 Batch: WG1454459-1					
Benzo(b)fluoranthene	ND		ug/kg	99	--
Benzo(k)fluoranthene	ND		ug/kg	99	--
Chrysene	ND		ug/kg	99	--
Acenaphthylene	ND		ug/kg	130	--
Anthracene	ND		ug/kg	99	--
Benzo(ghi)perylene	ND		ug/kg	130	--
Fluorene	ND		ug/kg	160	--
Phenanthrene	ND		ug/kg	99	--
Dibenzo(a,h)anthracene	ND		ug/kg	70	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	--
Pyrene	ND		ug/kg	99	--
Aniline	ND		ug/kg	200	--
4-Chloroaniline	ND		ug/kg	160	--
Dibenzofuran	ND		ug/kg	160	--
2-Methylnaphthalene	ND		ug/kg	70	--
Acetophenone	ND		ug/kg	160	--
2,4,6-Trichlorophenol	ND		ug/kg	70	--
2-Chlorophenol	ND		ug/kg	70	--
2,4-Dichlorophenol	ND		ug/kg	70	--
2,4-Dimethylphenol	ND		ug/kg	70	--
2-Nitrophenol	ND		ug/kg	360	--
4-Nitrophenol	ND		ug/kg	230	--
2,4-Dinitrophenol	ND		ug/kg	790	--
Pentachlorophenol	ND		ug/kg	330	--
Phenol	ND		ug/kg	160	--
2-Methylphenol	ND		ug/kg	160	--
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	--
2,4,5-Trichlorophenol	ND		ug/kg	160	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
 Analytical Date: 01/14/21 00:36
 Analyst: IM

Extraction Method: EPA 3546
 Extraction Date: 01/13/21 09:02

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 10-11 Batch: WG1454459-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	47		30-130
Phenol-d6	46		30-130
Nitrobenzene-d5	45		30-130
2-Fluorobiphenyl	52		30-130
2,4,6-Tribromophenol	59		30-130
4-Terphenyl-d14	56		30-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 10-11 Batch: WG1454459-2 WG1454459-3								
Acenaphthene	86		96		40-140	11		30
1,2,4-Trichlorobenzene	75		89		40-140	17		30
Hexachlorobenzene	93		100		40-140	7		30
Bis(2-chloroethyl)ether	75		90		40-140	18		30
2-Chloronaphthalene	82		96		40-140	16		30
1,2-Dichlorobenzene	73		85		40-140	15		30
1,3-Dichlorobenzene	73		84		40-140	14		30
1,4-Dichlorobenzene	73		83		40-140	13		30
3,3'-Dichlorobenzidine	78		83		40-140	6		30
2,4-Dinitrotoluene	106		118		40-140	11		30
2,6-Dinitrotoluene	89		102		40-140	14		30
Azobenzene	100		112		40-140	11		30
Fluoranthene	89		100		40-140	12		30
4-Bromophenyl phenyl ether	94		104		40-140	10		30
Bis(2-chloroisopropyl)ether	76		92		40-140	19		30
Bis(2-chloroethoxy)methane	89		102		40-140	14		30
Hexachlorobutadiene	69		85		40-140	21		30
Hexachloroethane	75		87		40-140	15		30
Isophorone	97		110		40-140	13		30
Naphthalene	76		92		40-140	19		30
Nitrobenzene	80		96		40-140	18		30
Bis(2-ethylhexyl)phthalate	123		138		40-140	11		30
Butyl benzyl phthalate	102		112		40-140	9		30

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 10-11 Batch: WG1454459-2 WG1454459-3								
Di-n-butylphthalate	116		130		40-140	11		30
Di-n-octylphthalate	120		136		40-140	13		30
Diethyl phthalate	105		115		40-140	9		30
Dimethyl phthalate	92		107		40-140	15		30
Benzo(a)anthracene	91		104		40-140	13		30
Benzo(a)pyrene	98		111		40-140	12		30
Benzo(b)fluoranthene	94		108		40-140	14		30
Benzo(k)fluoranthene	93		105		40-140	12		30
Chrysene	89		100		40-140	12		30
Acenaphthylene	89		104		40-140	16		30
Anthracene	92		100		40-140	8		30
Benzo(ghi)perylene	85		95		40-140	11		30
Fluorene	92		100		40-140	8		30
Phenanthrene	86		94		40-140	9		30
Dibenzo(a,h)anthracene	89		99		40-140	11		30
Indeno(1,2,3-cd)pyrene	87		99		40-140	13		30
Pyrene	87		97		40-140	11		30
Aniline	60		72		40-140	18		30
4-Chloroaniline	68		76		40-140	11		30
Dibenzofuran	86		96		40-140	11		30
2-Methylnaphthalene	80		95		40-140	17		30
Acetophenone	98		118		40-140	19		30
2,4,6-Trichlorophenol	90		101		30-130	12		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 10-11 Batch: WG1454459-2 WG1454459-3								
2-Chlorophenol	80		98		30-130	20		30
2,4-Dichlorophenol	91		102		30-130	11		30
2,4-Dimethylphenol	94		106		30-130	12		30
2-Nitrophenol	92		109		30-130	17		30
4-Nitrophenol	103		117		30-130	13		30
2,4-Dinitrophenol	82		88		30-130	7		30
Pentachlorophenol	97		108		30-130	11		30
Phenol	83		98		30-130	17		30
2-Methylphenol	88		102		30-130	15		30
3-Methylphenol/4-Methylphenol	96		109		30-130	13		30
2,4,5-Trichlorophenol	90		101		30-130	12		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	79		94		30-130
Phenol-d6	83		94		30-130
Nitrobenzene-d5	84		99		30-130
2-Fluorobiphenyl	82		94		30-130
2,4,6-Tribromophenol	102		113		30-130
4-Terphenyl-d14	91		100		30-130

PETROLEUM HYDROCARBONS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-08
 Client ID: TP-4 (8 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:40
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Analytical Method: 1,8015D(M)
 Analytical Date: 01/14/21 05:31
 Analyst: MEO
 Percent Solids: 69%

Extraction Method: EPA 3546
 Extraction Date: 01/13/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	46800	--	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
o-Terphenyl	82			40-140		

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-08
Client ID: TP-4 (8 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/14/21 12:45
Analyst: BAD
Percent Solids: 69%

Extraction Method:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Gasoline Range Organics - Westborough Lab						
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Gasoline Range Organics	ND		ug/kg	3400	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	95		70-130
4-Bromofluorobenzene	92		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/14/21 00:26
Analyst: SC
Percent Solids: 92%

Extraction Method: EPA 3546
Extraction Date: 01/13/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	287000		ug/kg	35700	--	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
o-Terphenyl	82			40-140		

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/14/21 13:15
Analyst: BAD
Percent Solids: 92%

Extraction Method:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Gasoline Range Organics - Westborough Lab						
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Gasoline Range Organics	ND		ug/kg	1900	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	95		70-130
4-Bromofluorobenzene	96		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/14/21 01:40
Analyst: SC
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 01/13/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	88600		ug/kg	38400	--	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
o-Terphenyl	91			40-140		

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/14/21 13:44
Analyst: BAD
Percent Solids: 86%

Extraction Method:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Gasoline Range Organics - Westborough Lab						
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Gasoline Range Organics	ND		ug/kg	4300	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	96		70-130
4-Bromofluorobenzene	94		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
 Analytical Date: 01/14/21 00:26
 Analyst: SC

Extraction Method: EPA 3546
 Extraction Date: 01/13/21 08:35

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Quantitation - Westborough Lab for sample(s): 08,10-11 Batch: WG1454441-1					
TPH (C10-C36)	ND		ug/kg	31300	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	66		40-140

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
 Analytical Date: 01/14/21 09:58
 Analyst: BAD

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 08,10-11 Batch: WG1454964-10					
Gasoline Range Organics	ND		ug/kg	2500	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	86		70-130
4-Bromofluorobenzene	85		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 08,10-11 Batch: WG1454441-2								
TPH (C10-C36)	140		-		40-140	-		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	78				40-140

Lab Control Sample Analysis**Batch Quality Control**

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 08,10-11 Batch: WG1454964-8 WG1454964-9								
Gasoline Range Organics	100		100		80-120	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	98		97		70-130
4-Bromofluorobenzene	120		120		70-130

PCBS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 01/14/21 00:36
Analyst: AD
Percent Solids: 92%

Extraction Method: EPA 3546
Extraction Date: 01/13/21 07:55
Cleanup Method: EPA 3665A
Cleanup Date: 01/13/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.7	--	1	A
Aroclor 1221	ND		ug/kg	35.7	--	1	A
Aroclor 1232	ND		ug/kg	35.7	--	1	A
Aroclor 1242	ND		ug/kg	35.7	--	1	A
Aroclor 1248	ND		ug/kg	35.7	--	1	A
Aroclor 1254	ND		ug/kg	35.7	--	1	A
Aroclor 1260	ND		ug/kg	35.7	--	1	A
Aroclor 1262	ND		ug/kg	35.7	--	1	A
Aroclor 1268	ND		ug/kg	35.7	--	1	A
PCBs, Total	ND		ug/kg	35.7	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	B
Decachlorobiphenyl	80		30-150	B
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	74		30-150	A

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 01/14/21 00:48
Analyst: JAW
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 01/13/21 07:55
Cleanup Method: EPA 3665A
Cleanup Date: 01/13/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	38.4	--	1	A
Aroclor 1221	ND		ug/kg	38.4	--	1	A
Aroclor 1232	ND		ug/kg	38.4	--	1	A
Aroclor 1242	ND		ug/kg	38.4	--	1	A
Aroclor 1248	ND		ug/kg	38.4	--	1	A
Aroclor 1254	ND		ug/kg	38.4	--	1	A
Aroclor 1260	ND		ug/kg	38.4	--	1	A
Aroclor 1262	ND		ug/kg	38.4	--	1	A
Aroclor 1268	ND		ug/kg	38.4	--	1	A
PCBs, Total	ND		ug/kg	38.4	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	B
Decachlorobiphenyl	91		30-150	B
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	85		30-150	A

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8082A
Analytical Date: 01/13/21 21:56
Analyst: JAW

Extraction Method: EPA 3546
Extraction Date: 01/13/21 07:55
Cleanup Method: EPA 3665A
Cleanup Date: 01/13/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 10-11 Batch: WG1454416-1						
Aroclor 1016	ND		ug/kg	32.2	--	A
Aroclor 1221	ND		ug/kg	32.2	--	A
Aroclor 1232	ND		ug/kg	32.2	--	A
Aroclor 1242	ND		ug/kg	32.2	--	A
Aroclor 1248	ND		ug/kg	32.2	--	A
Aroclor 1254	ND		ug/kg	32.2	--	A
Aroclor 1260	ND		ug/kg	32.2	--	A
Aroclor 1262	ND		ug/kg	32.2	--	A
Aroclor 1268	ND		ug/kg	32.2	--	A
PCBs, Total	ND		ug/kg	32.2	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	B
Decachlorobiphenyl	45		30-150	B
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	47		30-150	A

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 10-11 Batch: WG1454416-2 WG1454416-3									
Aroclor 1016	73		59		40-140	21		30	A
Aroclor 1260	60		48		40-140	22		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	92		73		30-150	B
Decachlorobiphenyl	64		46		30-150	B
2,4,5,6-Tetrachloro-m-xylene	84		68		30-150	A
Decachlorobiphenyl	64		50		30-150	A

METALS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-01
 Client ID: TP-1 (0.5-1.5 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 09:30
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	24.8		mg/kg	2.05	--	1	01/13/21 00:18	01/13/21 23:07	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-02
 Client ID: TP-2 (0.5-2.5 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 09:55
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	80.6		mg/kg	2.09	--	1	01/13/21 00:18	01/13/21 23:21	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-03
 Client ID: TP-2 (2.5-4.5 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 10:05
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	154		mg/kg	2.14	--	1	01/13/21 00:18	01/13/21 23:25	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-04
 Client ID: TP-3 (0.5-2.5 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 11:15
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	56.2		mg/kg	2.07	--	1	01/13/21 00:18	01/13/21 23:30	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-05
 Client ID: TP-3 (2.5-5.0 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 11:25
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	251		mg/kg	2.15	--	1	01/13/21 00:18	01/13/21 23:34	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-06
 Client ID: TP-4 (0.5-5.0 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:30
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	35.6		mg/kg	2.13	--	1	01/13/21 00:18	01/13/21 23:39	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-07
 Client ID: TP-4 (5.0-9.5 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:45
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	43.2		mg/kg	2.38	--	1	01/13/21 00:18	01/13/21 23:44	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-08
 Client ID: TP-4 (8 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:40
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	30.0		mg/kg	2.77	--	1	01/13/21 00:18	01/13/21 23:48	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-09
 Client ID: TP-5 (0.5-5.0 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:20
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	145		mg/kg	2.16	--	1	01/13/21 00:18	01/13/21 23:53	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
 Client ID: COMP-1 (0.5-5.0 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	3.54		mg/kg	0.426	--	1	01/13/21 00:18	01/13/21 23:57	EPA 3050B	97,6010D	BV
Barium, Total	62.4		mg/kg	0.426	--	1	01/13/21 00:18	01/13/21 23:57	EPA 3050B	97,6010D	BV
Cadmium, Total	0.481		mg/kg	0.426	--	1	01/13/21 00:18	01/13/21 23:57	EPA 3050B	97,6010D	BV
Chromium, Total	11.8		mg/kg	0.426	--	1	01/13/21 00:18	01/13/21 23:57	EPA 3050B	97,6010D	BV
Lead, Total	141		mg/kg	2.13	--	1	01/13/21 00:18	01/13/21 23:57	EPA 3050B	97,6010D	BV
Mercury, Total	0.162		mg/kg	0.074	--	1	01/13/21 00:23	01/13/21 11:31	EPA 7471B	97,7471B	VW
Selenium, Total	ND		mg/kg	2.13	--	1	01/13/21 00:18	01/13/21 23:57	EPA 3050B	97,6010D	BV
Silver, Total	ND		mg/kg	0.426	--	1	01/13/21 00:18	01/13/21 23:57	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
 Client ID: COMP-2 (5.0-9.5 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	0.871		mg/kg	0.447	--	1	01/13/21 00:18	01/14/21 00:16	EPA 3050B	97,6010D	BV
Barium, Total	27.0		mg/kg	0.447	--	1	01/13/21 00:18	01/14/21 00:16	EPA 3050B	97,6010D	BV
Cadmium, Total	ND		mg/kg	0.447	--	1	01/13/21 00:18	01/14/21 00:16	EPA 3050B	97,6010D	BV
Chromium, Total	8.86		mg/kg	0.447	--	1	01/13/21 00:18	01/14/21 00:16	EPA 3050B	97,6010D	BV
Lead, Total	23.8		mg/kg	2.23	--	1	01/13/21 00:18	01/14/21 00:16	EPA 3050B	97,6010D	BV
Mercury, Total	0.341		mg/kg	0.085	--	1	01/13/21 00:23	01/13/21 11:34	EPA 7471B	97,7471B	VW
Selenium, Total	ND		mg/kg	2.23	--	1	01/13/21 00:18	01/14/21 00:16	EPA 3050B	97,6010D	BV
Silver, Total	ND		mg/kg	0.447	--	1	01/13/21 00:18	01/14/21 00:16	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-11 Batch: WG1454110-1										
Arsenic, Total	ND		mg/kg	0.400	--	1	01/13/21 00:18	01/13/21 11:16	97,6010D	GD
Barium, Total	ND		mg/kg	0.400	--	1	01/13/21 00:18	01/13/21 11:16	97,6010D	GD
Cadmium, Total	ND		mg/kg	0.400	--	1	01/13/21 00:18	01/13/21 11:16	97,6010D	GD
Chromium, Total	ND		mg/kg	0.400	--	1	01/13/21 00:18	01/13/21 11:16	97,6010D	GD
Lead, Total	ND		mg/kg	2.00	--	1	01/13/21 00:18	01/13/21 11:16	97,6010D	GD
Selenium, Total	ND		mg/kg	2.00	--	1	01/13/21 00:18	01/13/21 11:16	97,6010D	GD
Silver, Total	ND		mg/kg	0.400	--	1	01/13/21 00:18	01/13/21 11:16	97,6010D	GD

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 10-11 Batch: WG1454111-1										
Mercury, Total	ND		mg/kg	0.083	--	1	01/13/21 00:23	01/13/21 11:18	97,7471B	VW

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-11 Batch: WG1454110-2 WG1454110-3 SRM Lot Number: D109-540								
Arsenic, Total	104		96		70-130	8		30
Barium, Total	100		87		75-125	14		30
Cadmium, Total	96		92		75-125	4		30
Chromium, Total	94		84		70-130	11		30
Lead, Total	98		87		72-128	12		30
Selenium, Total	104		95		68-132	9		30
Silver, Total	100		90		68-131	11		30
MCP Total Metals - Mansfield Lab Associated sample(s): 10-11 Batch: WG1454111-2 WG1454111-3 SRM Lot Number: D109-540								
Mercury, Total	97		89		60-140	9		30

INORGANICS & MISCELLANEOUS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Test Material Information

Source of Material: Unknown
Description of Material: Non-Metallic - Damp Soil
Particle Size: Medium
Preliminary Burning Time (sec): 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	01/14/21 02:58	1,1030	AW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Test Material Information

Source of Material: Unknown
Description of Material: Non-Metallic - Damp Soil
Particle Size: Medium
Preliminary Burning Time (sec): 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	01/14/21 02:58	1,1030	AW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-01
Client ID: TP-1 (0.5-1.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 09:30
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.1		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-02
Client ID: TP-2 (0.5-2.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 09:55
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.9		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-03
Client ID: TP-2 (2.5-4.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 10:05
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.2		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-04
Client ID: TP-3 (0.5-2.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 11:15
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.4		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-05
Client ID: TP-3 (2.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 11:25
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.2		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-06
Client ID: TP-4 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:30
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-07
Client ID: TP-4 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:45
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.7		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-08
Client ID: TP-4 (8 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 12:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.2		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-09
Client ID: TP-5 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:20
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-10
Client ID: COMP-1 (0.5-5.0 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Specific Conductance @ 25 C	100		umhos/cm	10	--	1	-	01/12/21 00:38	1,9050A	AW
Solids, Total	91.5		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI
pH (H)	8.5		SU	-	NA	1	-	01/11/21 22:22	1,9045D	AS
Cyanide, Reactive	ND		mg/kg	10	--	1	01/15/21 05:57	01/15/21 09:12	125,7.3	JA
Sulfide, Reactive	ND		mg/kg	10	--	1	01/15/21 05:57	01/15/21 08:58	125,7.3	JA



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

SAMPLE RESULTS

Lab ID: L2101367-11
Client ID: COMP-2 (5.0-9.5 FT)
Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:50
Date Received: 01/11/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Specific Conductance @ 25 C	72		umhos/cm	10	--	1	-	01/12/21 00:38	1,9050A	AW
Solids, Total	85.6		%	0.100	NA	1	-	01/12/21 12:29	121,2540G	RI
pH (H)	7.5		SU	-	NA	1	-	01/11/21 22:22	1,9045D	AS
Cyanide, Reactive	ND		mg/kg	10	--	1	01/15/21 05:57	01/15/21 09:13	125,7.3	JA
Sulfide, Reactive	ND		mg/kg	10	--	1	01/15/21 05:57	01/15/21 09:01	125,7.3	JA



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 10-11 Batch: WG1455251-1										
Sulfide, Reactive	ND		mg/kg	10	--	1	01/15/21 05:57	01/15/21 08:56	125,7.3	JA
General Chemistry - Westborough Lab for sample(s): 10-11 Batch: WG1455252-1										
Cyanide, Reactive	ND		mg/kg	10	--	1	01/15/21 05:57	01/15/21 09:10	125,7.3	JA

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 10-11 Batch: WG1453847-1								
pH	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 10-11 Batch: WG1453868-1								
Specific Conductance	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 10-11 Batch: WG1455251-2								
Sulfide, Reactive	103		-		60-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 10-11 Batch: WG1455252-2								
Cyanide, Reactive	56		-		30-125	-		40

Lab Duplicate Analysis
Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
Report Date: 01/18/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-11 QC Batch ID: WG1453994-1 QC Sample: L2101367-01 Client ID: TP-1 (0.5-1.5 FT)						
Solids, Total	93.1	92.9	%	0		20

Project Name: BROCKTON
Project Number: 201.02017.001

Serial_No:01182115:35
Lab Number: L2101367
Report Date: 01/18/21

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2101367-01A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-01B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-02A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-02B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-03A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-03B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-04A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-04B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-05A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-05B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-06A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-06B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-07A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-07B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-08A	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-08B	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		TPH-GRO(14),TS(7),TPH-DRO-D(14)
L2101367-08X	Vial MeOH preserved split	A	NA		4.5	Y	Absent		TPH-GRO(14)
L2101367-09A	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-09B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-PB-6010T-10(180)
L2101367-10A	Vial MeOH preserved	A	NA		4.5	Y	Absent		TPH-GRO(14),MCP-8260HLW-10(14)
L2101367-10B	Vial water preserved	A	NA		4.5	Y	Absent	12-JAN-21 02:23	MCP-8260HLW-10(14)
L2101367-10C	Vial water preserved	A	NA		4.5	Y	Absent	12-JAN-21 02:23	MCP-8260HLW-10(14)
L2101367-10D	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)

Project Name: BROCKTON
Project Number: 201.02017.001

Serial_No: 01182115:35
Lab Number: L2101367
Report Date: 01/18/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2101367-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-CR-6010T-10(180),MCP-AS-6010T-10(180),MCP-CD-6010T-10(180),MCP-7471T-10(28),MCP-AG-6010T-10(180),MCP-SE-6010T-10(180),MCP-BA-6010T-10(180),MCP-PB-6010T-10(180)
L2101367-10F	Glass 500ml/16oz unpreserved	A	NA		4.5	Y	Absent		REACTS(14),IGNIT-1030(14),MCP-8082-10(365),MCP-8270-10(14),PH-9045(1),REACTCN(14),TPH-DRO-D(14),COND-9050(28)
L2101367-11A	Vial MeOH preserved	A	NA		4.5	Y	Absent		TPH-GRO(14),MCP-8260HLW-10(14)
L2101367-11B	Vial water preserved	A	NA		4.5	Y	Absent	12-JAN-21 02:23	MCP-8260HLW-10(14)
L2101367-11C	Vial water preserved	A	NA		4.5	Y	Absent	12-JAN-21 02:25	MCP-8260HLW-10(14)
L2101367-11D	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2101367-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		MCP-CR-6010T-10(180),MCP-AS-6010T-10(180),MCP-7471T-10(28),MCP-CD-6010T-10(180),MCP-AG-6010T-10(180),MCP-SE-6010T-10(180),MCP-BA-6010T-10(180),MCP-PB-6010T-10(180)
L2101367-11F	Glass 500ml/16oz unpreserved	A	NA		4.5	Y	Absent		IGNIT-1030(14),REACTS(14),MCP-8082-10(365),MCP-8270-10(14),PH-9045(1),TPH-DRO-D(14),REACTCN(14),COND-9050(28)

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



Project Name: BROCKTON
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Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101367
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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 125 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates IIIA, April 1998.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 17

Department: **Quality Assurance**

Published Date: 4/28/2020 9:42:21 AM

Title: **Certificate/Approval Program Summary**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg. **EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 2

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Project Information

Project Name: Brockton
Project Location: Parcels 109-54/SS
Project #: 201.02017.001
Project Manager: Tracy Costa
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Date Rec'd in Lab: 1/11/21ALPHA Job #: 22101367

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #: 12839

Client Information

Client: Ransom Consulting
Address: LED Valley St
Providence, RI
Phone: 978-998-2503
Email: tracy.costa@ransomenv.com

Additional Project Information:

Run TCLP lead if trigger is exceeded (100 mg/kg)

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program Criteria

ANALYSIS										SAMPLE INFO		TOTAL # BOTTLES
VOC: <input checked="" type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 524.2												
SVOC: <input checked="" type="checkbox"/> AEN <input type="checkbox"/> PAH										Filtration		
METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15										<input type="checkbox"/> Field		
METALS: <input type="checkbox"/> RCRA5 <input checked="" type="checkbox"/> RCRA8 <input type="checkbox"/> PP13										<input type="checkbox"/> Lab to do		
EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only										Preservation		
VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only										<input type="checkbox"/> Lab to do		
<input checked="" type="checkbox"/> PCB <input type="checkbox"/> PEST										Sample Comments		
TPH: <input type="checkbox"/> Quant Only <input checked="" type="checkbox"/> Snapprint												
TOTAL LEAD 600/020												
Dry wt - Total 5011 kg												
Corrosivity, reactivity, 15011/19a shipout												

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials
		Date	Time		
01367-01	TP-1 (0.5-1.0 FT)	1/11/2021	09:30	S	TZ
-02	TP-2 (0.5-2.5 FT)	1/11/2021	09:55	S	TZ
-03	TP-2 (2.5-4.5 FT)	1/11/2021	10:05	S	TZ
-04	TP-3 (0.5-2.5 FT)	1/11/2021	11:15	S	TZ
-05	TP-3 (2.5-5.0 FT)	1/11/2021	11:25	S	TZ
-06	TP-4 (0.5-5.0 FT)	1/11/2021	12:30	S	TZ
-07	TP-4 (5.0-9.5 FT)	1/11/2021	12:45	S	TZ
-08	TP-4 (9 FT)	1/11/2021	12:40	S	TZ
-09	TP-5 (0.5-5.0 FT)	1/11/2021	13:20	S	TZ
-10	COMP-1 (0.5-5.0)	1/11/2021	13:40	S	TZ

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO₃
D= H₂SO₄
E= NaOH
F= MeOH
G= NaHSO₄
H= Na₂S₂O₃
I= Ascorbic Acid
J= NH₄Cl
K= Zn Acetate
Q= Other

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

Method Blank Summary

Form 4

Volatiles

Client	: Ransom Consulting, Inc.	Lab Number	: L2101367
Project Name	: BROCKTON	Project Number	: 201.02017.001
Lab Sample ID	: WG1455401-5	Lab File ID	: V04210115A06
Instrument ID	: VOA104		
Matrix	: SOIL	Analysis Date	: 01/15/21 08:18

Client Sample No.	Lab Sample ID	Analysis Date
WG1455401-3LCS	WG1455401-3	01/15/21 06:36
WG1455401-4LCSD	WG1455401-4	01/15/21 07:27
COMP-1 (0.5-5.0 FT)	L2101367-10	01/15/21 09:35
COMP-2 (5.0-9.5 FT)	L2101367-11	01/15/21 10:00

Calibration Verification Summary

Form 7

Volatiles

Client : Ransom Consulting, Inc.
 Project Name : BROCKTON
 Instrument ID : VOA104
 Lab File ID : V04210115A02
 Sample No : WG1455401-2
 Channel :

Lab Number : L2101367
 Project Number : 201.02017.001
 Calibration Date : 01/15/21 06:36
 Init. Calib. Date(s) : 12/31/20 12/31/20
 Init. Calib. Times : 03:19 06:43

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	106	0
Dichlorodifluoromethane	0.3	0.281	-	6.3	20	94	0
Chloromethane	0.328	0.285	-	13.1	20	96	0
Vinyl chloride	0.316	0.295	-	6.6	20	96	0
Bromomethane	40	40.737	-	-1.8	20	104	0
Chloroethane	0.206	0.179	-	13.1	20	99	0
Trichlorofluoromethane	0.47	0.471	-	-0.2	20	98	0
Ethyl ether	0.142	0.129	-	9.2	20	99	0
1,1-Dichloroethene	0.274	0.271	-	1.1	20	100	0
Carbon disulfide	0.806	0.715	-	11.3	20	98	0
Methylene chloride	0.343	0.301	-	12.2	20	98	0
Acetone	40	36.658	-	8.4	20	100	0
trans-1,2-Dichloroethene	0.316	0.309	-	2.2	20	102	0
Methyl tert-butyl ether	0.749	0.684	-	8.7	20	100	0
Diisopropyl ether	0.922	0.818	-	11.3	20	95	0
1,1-Dichloroethane	0.575	0.529	-	8	20	99	0
Ethyl tert-butyl ether	0.923	0.826	-	10.5	20	96	0
cis-1,2-Dichloroethene	0.36	0.33	-	8.3	20	99	0
2,2-Dichloropropane	0.493	0.482	-	2.2	20	102	0
Bromochloromethane	0.151	0.14	-	7.3	20	99	0
Chloroform	0.612	0.558	-	8.8	20	101	0
Carbon tetrachloride	0.451	0.452	-	-0.2	20	102	0
Tetrahydrofuran	0.054	0.055	-	-1.9	20	113	0
Dibromofluoromethane	0.27	0.263	-	2.6	20	102	0
1,1,1-Trichloroethane	0.518	0.498	-	3.9	20	102	0
2-Butanone	0.084	0.069*	-	17.9	20	93	0
1,1-Dichloropropene	0.424	0.416	-	1.9	20	101	0
Benzene	1.311	1.16	-	11.5	20	100	0
tert-Amyl methyl ether	0.834	0.751	-	10	20	100	0
1,2-Dichloroethane-d4	0.247	0.238	-	3.6	20	105	0
1,2-Dichloroethane	0.406	0.364	-	10.3	20	99	0
Trichloroethene	0.352	0.328	-	6.8	20	103	0
Dibromomethane	0.183	0.169	-	7.7	20	100	0
1,2-Dichloropropane	0.321	0.288	-	10.3	20	98	0
Bromodichloromethane	0.493	0.433	-	12.2	20	99	0
1,4-Dioxane	0.00205	0.00189*	-	7.8	20	91	0
cis-1,3-Dichloropropene	0.527	0.478	-	9.3	20	100	0
Chlorobenzene-d5	1	1	-	0	20	118	0
Toluene-d8	1.324	1.248	-	5.7	20	110	0
Toluene	1.051	0.891	-	15.2	20	102	0
4-Methyl-2-pentanone	0.098	0.085*	-	13.3	20	97	0
Tetrachloroethene	0.474	0.405	-	14.6	20	102	0
trans-1,3-Dichloropropene	0.574	0.486	-	15.3	20	99	0

* Value outside of QC limits.



Calibration Verification Summary

Form 7

Volatiles

Client : Ransom Consulting, Inc.
 Project Name : BROCKTON
 Instrument ID : VOA104
 Lab File ID : V04210115A02
 Sample No : WG1455401-2
 Channel :

Lab Number : L2101367
 Project Number : 201.02017.001
 Calibration Date : 01/15/21 06:36
 Init. Calib. Date(s) : 12/31/20 12/31/20
 Init. Calib. Times : 03:19 06:43

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,1,2-Trichloroethane	0.287	0.235	-	18.1	20	98	0
Chlorodibromomethane	0.441	0.356	-	19.3	20	100	0
1,3-Dichloropropane	0.547	0.454	-	17	20	100	0
1,2-Dibromoethane	0.334	0.278	-	16.8	20	99	0
2-Hexanone	0.178	0.138	-	22.5*	20	94	0
Chlorobenzene	40	36.508	-	8.7	20	102	0
Ethylbenzene	2.051	1.747	-	14.8	20	103	0
1,1,1,2-Tetrachloroethane	0.45	0.357	-	20.7*	20	100	0
p/m Xylene	0.797	0.664	-	16.7	20	103	0
o Xylene	0.76	0.616	-	18.9	20	103	0
Styrene	1.262	1.02	-	19.2	20	102	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	122	0
Bromoform	0.522	0.417	-	20.1*	20	99	0
Isopropylbenzene	3.951	3.325	-	15.8	20	104	0
4-Bromofluorobenzene	0.988	0.975	-	1.3	20	122	0
Bromobenzene	1.015	0.794	-	21.8*	20	100	0
n-Propylbenzene	4.779	4.004	-	16.2	20	103	0
1,1,2,2-Tetrachloroethane	0.85	0.634	-	25.4*	20	99	0
2-Chlorotoluene	2.895	2.331	-	19.5	20	104	0
1,3,5-Trimethylbenzene	3.373	2.777	-	17.7	20	103	0
1,2,3-Trichloropropane	0.621	0.474	-	23.7*	20	101	0
4-Chlorotoluene	3.01	2.403	-	20.2*	20	104	0
tert-Butylbenzene	2.724	2.269	-	16.7	20	103	0
1,2,4-Trimethylbenzene	3.298	2.697	-	18.2	20	103	0
sec-Butylbenzene	4.235	3.525	-	16.8	20	103	0
p-Isopropyltoluene	3.496	2.922	-	16.4	20	103	0
1,3-Dichlorobenzene	1.874	1.5	-	20	20	102	0
1,4-Dichlorobenzene	1.906	1.491	-	21.8*	20	101	0
n-Butylbenzene	3.279	2.734	-	16.6	20	102	0
1,2-Dichlorobenzene	1.701	1.342	-	21.1*	20	101	0
1,2-Dibromo-3-chloropropan	0.102	0.086	-	15.7	20	99	0
Hexachlorobutadiene	0.726	0.586	-	19.3	20	100	0
1,2,4-Trichlorobenzene	1.146	0.914	-	20.2*	20	102	0
Naphthalene	2.129	1.64	-	23*	20	101	0
1,2,3-Trichlorobenzene	1.002	0.775	-	22.7*	20	100	0

* Value outside of QC limits.





ANALYTICAL REPORT

Lab Number:	L2101571
Client:	Ransom Consulting, Inc. 60 Valley Street Building F, Suite 106 Providence, RI 02909
ATTN:	Tracey Costa
Phone:	(401) 433-2160
Project Name:	BROCKTON
Project Number:	201.02017.001
Report Date:	01/19/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2101571-01	TP-6 (0.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 12:20	01/12/21
L2101571-02	TP-6 (5.0-9.0 FT)	SOIL	PARCEL 109-044	01/12/21 12:30	01/12/21
L2101571-03	TP-7 (0.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 11:35	01/12/21
L2101571-04	TP-7 (5.0-9.0 FT)	SOIL	PARCEL 109-044	01/12/21 11:45	01/12/21
L2101571-05	TP-8 (0.5-2.5 FT)	SOIL	PARCEL 109-044	01/12/21 11:05	01/12/21
L2101571-06	TP-8 (2.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 11:15	01/12/21
L2101571-07	TP-9 (0.5-2.5 FT)	SOIL	PARCEL 109-044	01/12/21 10:35	01/12/21
L2101571-08	TP-9 (2.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 10:42	01/12/21
L2101571-09	TP-10 (0.5-2.5 FT)	SOIL	PARCEL 109-044	01/12/21 09:50	01/12/21
L2101571-10	TP-10 (2.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 10:00	01/12/21
L2101571-11	COMP-3 (0.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 12:05	01/12/21
L2101571-12	COMP-4 (5.0-9.0 FT)	SOIL	PARCEL 109-044	01/12/21 12:45	01/12/21

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

In reference to question H:

A Matrix Spike was not submitted for the analysis of Total Metals.

Volatile Organics

The initial calibration, associated with L2101571-11 and -12, utilized a quadratic fit for bromoform and 1,2-dibromo-3-chloropropane.

In reference to question H:

The initial calibration, associated with L2101571-11 and -12, did not meet the method required minimum response factor on the lowest calibration standard for 1,4-dioxane (0.0046), as well as the average response factor for 1,4-dioxane. In addition, the initial calibration verification is outside acceptance criteria for dichlorodifluoromethane (163%), chloromethane (130%), and bromomethane (131%).

The continuing calibration standard, associated with L2101571-11 and -12, is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

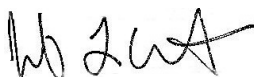
Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Jennifer L. Clements

Title: Technical Director/Representative

Date: 01/19/21

QC OUTLIER SUMMARY REPORT

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
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There are no QC Outliers associated with this report.

ORGANICS

VOLATILES

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8260C
Analytical Date: 01/15/21 19:26
Analyst: MKS
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.0	--	1
1,1-Dichloroethane	ND		ug/kg	0.60	--	1
Chloroform	ND		ug/kg	0.90	--	1
Carbon tetrachloride	ND		ug/kg	0.60	--	1
1,2-Dichloropropane	ND		ug/kg	0.60	--	1
Dibromochloromethane	ND		ug/kg	0.60	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.60	--	1
Tetrachloroethene	ND		ug/kg	0.30	--	1
Chlorobenzene	ND		ug/kg	0.30	--	1
Trichlorofluoromethane	ND		ug/kg	2.4	--	1
1,2-Dichloroethane	ND		ug/kg	0.60	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.30	--	1
Bromodichloromethane	ND		ug/kg	0.30	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.60	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.30	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.30	--	1
1,1-Dichloropropene	ND		ug/kg	0.30	--	1
Bromoform	ND		ug/kg	2.4	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.30	--	1
Benzene	ND		ug/kg	0.30	--	1
Toluene	ND		ug/kg	0.60	--	1
Ethylbenzene	ND		ug/kg	0.60	--	1
Chloromethane	ND		ug/kg	2.4	--	1
Bromomethane	ND		ug/kg	1.2	--	1
Vinyl chloride	ND		ug/kg	0.60	--	1
Chloroethane	ND		ug/kg	1.2	--	1
1,1-Dichloroethene	ND		ug/kg	0.60	--	1
trans-1,2-Dichloroethene	ND		ug/kg	0.90	--	1

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Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.30	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.2	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.2	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.2	--	1
Methyl tert butyl ether	ND		ug/kg	1.2	--	1
p/m-Xylene	ND		ug/kg	1.2	--	1
o-Xylene	ND		ug/kg	0.60	--	1
Xylenes, Total	ND		ug/kg	0.60	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.60	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.60	--	1
Dibromomethane	ND		ug/kg	1.2	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.2	--	1
Styrene	ND		ug/kg	0.60	--	1
Dichlorodifluoromethane	ND		ug/kg	6.0	--	1
Acetone	ND		ug/kg	15	--	1
Carbon disulfide	ND		ug/kg	6.0	--	1
Methyl ethyl ketone	ND		ug/kg	6.0	--	1
Methyl isobutyl ketone	ND		ug/kg	6.0	--	1
2-Hexanone	ND		ug/kg	6.0	--	1
Bromochloromethane	ND		ug/kg	1.2	--	1
Tetrahydrofuran	ND		ug/kg	2.4	--	1
2,2-Dichloropropane	ND		ug/kg	1.2	--	1
1,2-Dibromoethane	ND		ug/kg	0.60	--	1
1,3-Dichloropropane	ND		ug/kg	1.2	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.30	--	1
Bromobenzene	ND		ug/kg	1.2	--	1
n-Butylbenzene	ND		ug/kg	0.60	--	1
sec-Butylbenzene	ND		ug/kg	0.60	--	1
tert-Butylbenzene	ND		ug/kg	1.2	--	1
o-Chlorotoluene	ND		ug/kg	1.2	--	1
p-Chlorotoluene	ND		ug/kg	1.2	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.8	--	1
Hexachlorobutadiene	ND		ug/kg	2.4	--	1
Isopropylbenzene	ND		ug/kg	0.60	--	1
p-Isopropyltoluene	ND		ug/kg	0.60	--	1
Naphthalene	ND		ug/kg	2.4	--	1
n-Propylbenzene	ND		ug/kg	0.60	--	1

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Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	1.2	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.2	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.2	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.2	--	1
Diethyl ether	ND		ug/kg	1.2	--	1
Diisopropyl Ether	ND		ug/kg	1.2	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/kg	1.2	--	1
Tertiary-Amyl Methyl Ether	ND		ug/kg	1.2	--	1
1,4-Dioxane	ND		ug/kg	48	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	102		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8260C
Analytical Date: 01/15/21 19:47
Analyst: MKS
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	2.8	--	1
1,1-Dichloroethane	ND		ug/kg	0.56	--	1
Chloroform	ND		ug/kg	0.84	--	1
Carbon tetrachloride	ND		ug/kg	0.56	--	1
1,2-Dichloropropane	ND		ug/kg	0.56	--	1
Dibromochloromethane	ND		ug/kg	0.56	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.56	--	1
Tetrachloroethene	ND		ug/kg	0.28	--	1
Chlorobenzene	ND		ug/kg	0.28	--	1
Trichlorofluoromethane	ND		ug/kg	2.2	--	1
1,2-Dichloroethane	ND		ug/kg	0.56	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.28	--	1
Bromodichloromethane	ND		ug/kg	0.28	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.56	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.28	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.28	--	1
1,1-Dichloropropene	ND		ug/kg	0.28	--	1
Bromoform	ND		ug/kg	2.2	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.28	--	1
Benzene	ND		ug/kg	0.28	--	1
Toluene	ND		ug/kg	0.56	--	1
Ethylbenzene	ND		ug/kg	0.56	--	1
Chloromethane	ND		ug/kg	2.2	--	1
Bromomethane	ND		ug/kg	1.1	--	1
Vinyl chloride	ND		ug/kg	0.56	--	1
Chloroethane	ND		ug/kg	1.1	--	1
1,1-Dichloroethene	ND		ug/kg	0.56	--	1
trans-1,2-Dichloroethene	ND		ug/kg	0.84	--	1

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Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.28	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.1	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.1	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.1	--	1
Methyl tert butyl ether	ND		ug/kg	1.1	--	1
p/m-Xylene	ND		ug/kg	1.1	--	1
o-Xylene	ND		ug/kg	0.56	--	1
Xylenes, Total	ND		ug/kg	0.56	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.56	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.56	--	1
Dibromomethane	ND		ug/kg	1.1	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.1	--	1
Styrene	ND		ug/kg	0.56	--	1
Dichlorodifluoromethane	ND		ug/kg	5.6	--	1
Acetone	ND		ug/kg	14	--	1
Carbon disulfide	ND		ug/kg	5.6	--	1
Methyl ethyl ketone	ND		ug/kg	5.6	--	1
Methyl isobutyl ketone	ND		ug/kg	5.6	--	1
2-Hexanone	ND		ug/kg	5.6	--	1
Bromochloromethane	ND		ug/kg	1.1	--	1
Tetrahydrofuran	ND		ug/kg	2.2	--	1
2,2-Dichloropropane	ND		ug/kg	1.1	--	1
1,2-Dibromoethane	ND		ug/kg	0.56	--	1
1,3-Dichloropropane	ND		ug/kg	1.1	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.28	--	1
Bromobenzene	ND		ug/kg	1.1	--	1
n-Butylbenzene	ND		ug/kg	0.56	--	1
sec-Butylbenzene	ND		ug/kg	0.56	--	1
tert-Butylbenzene	ND		ug/kg	1.1	--	1
o-Chlorotoluene	ND		ug/kg	1.1	--	1
p-Chlorotoluene	ND		ug/kg	1.1	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.7	--	1
Hexachlorobutadiene	ND		ug/kg	2.2	--	1
Isopropylbenzene	ND		ug/kg	0.56	--	1
p-Isopropyltoluene	ND		ug/kg	0.56	--	1
Naphthalene	ND		ug/kg	2.2	--	1
n-Propylbenzene	ND		ug/kg	0.56	--	1

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Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 Low - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	1.1	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.1	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.1	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.1	--	1
Diethyl ether	ND		ug/kg	1.1	--	1
Diisopropyl Ether	ND		ug/kg	1.1	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/kg	1.1	--	1
Tertiary-Amyl Methyl Ether	ND		ug/kg	1.1	--	1
1,4-Dioxane	ND		ug/kg	45	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	106		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 01/15/21 14:52
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11-12 Batch: WG1455883-5					
Methylene chloride	ND		ug/kg	5.0	--
1,1-Dichloroethane	ND		ug/kg	1.0	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	1.0	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.0	--
Tetrachloroethene	ND		ug/kg	0.50	--
Chlorobenzene	ND		ug/kg	0.50	--
Trichlorofluoromethane	ND		ug/kg	4.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	0.50	--
Bromodichloromethane	ND		ug/kg	0.50	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	0.50	--
1,3-Dichloropropene, Total	ND		ug/kg	0.50	--
1,1-Dichloropropene	ND		ug/kg	0.50	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	--
Benzene	ND		ug/kg	0.50	--
Toluene	ND		ug/kg	1.0	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	4.0	--
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	1.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--
Trichloroethene	ND		ug/kg	0.50	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C
 Analytical Date: 01/15/21 14:52
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11-12 Batch: WG1455883-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	--
1,3-Dichlorobenzene	ND		ug/kg	2.0	--
1,4-Dichlorobenzene	ND		ug/kg	2.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	1.0	--
Xylenes, Total	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	2.0	--
1,2,3-Trichloropropane	ND		ug/kg	2.0	--
Styrene	ND		ug/kg	1.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	25	--
Carbon disulfide	ND		ug/kg	10	--
Methyl ethyl ketone	ND		ug/kg	10	--
Methyl isobutyl ketone	ND		ug/kg	10	--
2-Hexanone	ND		ug/kg	10	--
Bromochloromethane	ND		ug/kg	2.0	--
Tetrahydrofuran	ND		ug/kg	4.0	--
2,2-Dichloropropane	ND		ug/kg	2.0	--
1,2-Dibromoethane	ND		ug/kg	1.0	--
1,3-Dichloropropane	ND		ug/kg	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	--
Bromobenzene	ND		ug/kg	2.0	--
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	2.0	--
o-Chlorotoluene	ND		ug/kg	2.0	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 01/15/21 14:52
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11-12 Batch: WG1455883-5					
p-Chlorotoluene	ND		ug/kg	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	--
Hexachlorobutadiene	ND		ug/kg	4.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	4.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	--
Diethyl ether	ND		ug/kg	2.0	--
Diisopropyl Ether	ND		ug/kg	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	2.0	--
1,4-Dioxane	ND		ug/kg	80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11-12 Batch: WG1455883-3 WG1455883-4								
Methylene chloride	97		92		70-130	5		20
1,1-Dichloroethane	97		91		70-130	6		20
Chloroform	95		88		70-130	8		20
Carbon tetrachloride	106		99		70-130	7		20
1,2-Dichloropropane	93		89		70-130	4		20
Dibromochloromethane	97		96		70-130	1		20
1,1,2-Trichloroethane	89		90		70-130	1		20
Tetrachloroethene	100		97		70-130	3		20
Chlorobenzene	98		96		70-130	2		20
Trichlorofluoromethane	101		94		70-130	7		20
1,2-Dichloroethane	87		84		70-130	4		20
1,1,1-Trichloroethane	101		94		70-130	7		20
Bromodichloromethane	94		89		70-130	5		20
trans-1,3-Dichloropropene	100		99		70-130	1		20
cis-1,3-Dichloropropene	93		90		70-130	3		20
1,1-Dichloropropene	101		95		70-130	6		20
Bromoform	96		92		70-130	4		20
1,1,2,2-Tetrachloroethane	88		85		70-130	3		20
Benzene	98		93		70-130	5		20
Toluene	96		93		70-130	3		20
Ethylbenzene	98		95		70-130	3		20
Chloromethane	104		96		70-130	8		20
Bromomethane	122		106		70-130	14		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11-12 Batch: WG1455883-3 WG1455883-4								
Vinyl chloride	105		99		70-130	6		20
Chloroethane	110		101		70-130	9		20
1,1-Dichloroethene	101		94		70-130	7		20
trans-1,2-Dichloroethene	99		92		70-130	7		20
Trichloroethene	97		92		70-130	5		20
1,2-Dichlorobenzene	98		88		70-130	11		20
1,3-Dichlorobenzene	102		91		70-130	11		20
1,4-Dichlorobenzene	100		90		70-130	11		20
Methyl tert butyl ether	87		88		70-130	1		20
p/m-Xylene	99		95		70-130	4		20
o-Xylene	99		95		70-130	4		20
cis-1,2-Dichloroethene	93		89		70-130	4		20
Dibromomethane	90		87		70-130	3		20
1,2,3-Trichloropropane	88		84		70-130	5		20
Styrene	95		92		70-130	3		20
Dichlorodifluoromethane	105		98		70-130	7		20
Acetone	86		95		70-130	10		20
Carbon disulfide	102		94		70-130	8		20
Methyl ethyl ketone	81		87		70-130	7		20
Methyl isobutyl ketone	86		93		70-130	8		20
2-Hexanone	81		89		70-130	9		20
Bromochloromethane	91		86		70-130	6		20
Tetrahydrofuran	108		116		70-130	7		20

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11-12 Batch: WG1455883-3 WG1455883-4								
2,2-Dichloropropane	106		98		70-130	8		20
1,2-Dibromoethane	88		90		70-130	2		20
1,3-Dichloropropane	91		91		70-130	0		20
1,1,1,2-Tetrachloroethane	97		97		70-130	0		20
Bromobenzene	94		86		70-130	9		20
n-Butylbenzene	116		103		70-130	12		20
sec-Butylbenzene	106		95		70-130	11		20
tert-Butylbenzene	103		93		70-130	10		20
o-Chlorotoluene	103		88		70-130	16		20
p-Chlorotoluene	101		92		70-130	9		20
1,2-Dibromo-3-chloropropane	96		92		70-130	4		20
Hexachlorobutadiene	108		98		70-130	10		20
Isopropylbenzene	102		90		70-130	13		20
p-Isopropyltoluene	108		98		70-130	10		20
Naphthalene	92		89		70-130	3		20
n-Propylbenzene	106		94		70-130	12		20
1,2,3-Trichlorobenzene	98		90		70-130	9		20
1,2,4-Trichlorobenzene	103		94		70-130	9		20
1,3,5-Trimethylbenzene	104		93		70-130	11		20
1,2,4-Trimethylbenzene	104		92		70-130	12		20
Diethyl ether	89		89		70-130	0		20
Diisopropyl Ether	92		90		70-130	2		20
Ethyl-Tert-Butyl-Ether	89		88		70-130	1		20

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11-12 Batch: WG1455883-3 WG1455883-4								
Tertiary-Amyl Methyl Ether	88		88		70-130	0		20
1,4-Dioxane	75		78		70-130	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		97		70-130
Toluene-d8	99		102		70-130
4-Bromofluorobenzene	99		97		70-130
Dibromofluoromethane	100		98		70-130

SEMIVOLATILES

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11 D
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 01/19/21 02:39
Analyst: WR
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 01/14/21 18:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Acenaphthene	1000		ug/kg	300	--	2
1,2,4-Trichlorobenzene	ND		ug/kg	370	--	2
Hexachlorobenzene	ND		ug/kg	160	--	2
Bis(2-chloroethyl)ether	ND		ug/kg	160	--	2
2-Chloronaphthalene	ND		ug/kg	370	--	2
1,2-Dichlorobenzene	ND		ug/kg	370	--	2
1,3-Dichlorobenzene	ND		ug/kg	370	--	2
1,4-Dichlorobenzene	ND		ug/kg	160	--	2
3,3'-Dichlorobenzidine	ND		ug/kg	370	--	2
2,4-Dinitrotoluene	ND		ug/kg	160	--	2
2,6-Dinitrotoluene	ND		ug/kg	370	--	2
Azobenzene	ND		ug/kg	370	--	2
Fluoranthene	10000		ug/kg	220	--	2
4-Bromophenyl phenyl ether	ND		ug/kg	370	--	2
Bis(2-chloroisopropyl)ether	ND		ug/kg	160	--	2
Bis(2-chloroethoxy)methane	ND		ug/kg	400	--	2
Hexachlorobutadiene	ND		ug/kg	370	--	2
Hexachloroethane	ND		ug/kg	160	--	2
Isophorone	ND		ug/kg	330	--	2
Naphthalene	840		ug/kg	370	--	2
Nitrobenzene	ND		ug/kg	330	--	2
Bis(2-ethylhexyl)phthalate	ND		ug/kg	370	--	2
Butyl benzyl phthalate	ND		ug/kg	370	--	2
Di-n-butylphthalate	ND		ug/kg	370	--	2
Di-n-octylphthalate	ND		ug/kg	370	--	2
Diethyl phthalate	ND		ug/kg	370	--	2
Dimethyl phthalate	ND		ug/kg	160	--	2
Benzo(a)anthracene	5200		ug/kg	220	--	2

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11 D
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Benzo(a)pyrene	4600		ug/kg	300	--	2
Benzo(b)fluoranthene	6100		ug/kg	220	--	2
Benzo(k)fluoranthene	1400		ug/kg	220	--	2
Chrysene	4900		ug/kg	220	--	2
Acenaphthylene	ND		ug/kg	300	--	2
Anthracene	2200		ug/kg	220	--	2
Benzo(ghi)perylene	2800		ug/kg	300	--	2
Fluorene	920		ug/kg	370	--	2
Phenanthrene	9900		ug/kg	220	--	2
Dibenzo(a,h)anthracene	700		ug/kg	160	--	2
Indeno(1,2,3-cd)pyrene	3100		ug/kg	300	--	2
Pyrene	9000		ug/kg	220	--	2
Aniline	ND		ug/kg	440	--	2
4-Chloroaniline	ND		ug/kg	370	--	2
Dibenzofuran	740		ug/kg	370	--	2
2-Methylnaphthalene	340		ug/kg	160	--	2
Acetophenone	ND		ug/kg	370	--	2
2,4,6-Trichlorophenol	ND		ug/kg	160	--	2
2-Chlorophenol	ND		ug/kg	160	--	2
2,4-Dichlorophenol	ND		ug/kg	160	--	2
2,4-Dimethylphenol	ND		ug/kg	160	--	2
2-Nitrophenol	ND		ug/kg	800	--	2
4-Nitrophenol	ND		ug/kg	520	--	2
2,4-Dinitrophenol	ND		ug/kg	1800	--	2
Pentachlorophenol	ND		ug/kg	740	--	2
Phenol	ND		ug/kg	370	--	2
2-Methylphenol	ND		ug/kg	370	--	2
3-Methylphenol/4-Methylphenol	ND		ug/kg	530	--	2
2,4,5-Trichlorophenol	ND		ug/kg	370	--	2

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11 D
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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MCP Semivolatile Organics - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	81		30-130
Phenol-d6	79		30-130
Nitrobenzene-d5	70		30-130
2-Fluorobiphenyl	67		30-130
2,4,6-Tribromophenol	76		30-130
4-Terphenyl-d14	52		30-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8270D
Analytical Date: 01/18/21 15:35
Analyst: SZ
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 01/14/21 18:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Acenaphthene	ND		ug/kg	160	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	200	--	1
Hexachlorobenzene	ND		ug/kg	86	--	1
Bis(2-chloroethyl)ether	ND		ug/kg	86	--	1
2-Chloronaphthalene	ND		ug/kg	200	--	1
1,2-Dichlorobenzene	ND		ug/kg	200	--	1
1,3-Dichlorobenzene	ND		ug/kg	200	--	1
1,4-Dichlorobenzene	ND		ug/kg	86	--	1
3,3'-Dichlorobenzidine	ND		ug/kg	200	--	1
2,4-Dinitrotoluene	ND		ug/kg	86	--	1
2,6-Dinitrotoluene	ND		ug/kg	200	--	1
Azobenzene	ND		ug/kg	200	--	1
Fluoranthene	520		ug/kg	120	--	1
4-Bromophenyl phenyl ether	ND		ug/kg	200	--	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	86	--	1
Bis(2-chloroethoxy)methane	ND		ug/kg	220	--	1
Hexachlorobutadiene	ND		ug/kg	200	--	1
Hexachloroethane	ND		ug/kg	86	--	1
Isophorone	ND		ug/kg	180	--	1
Naphthalene	ND		ug/kg	200	--	1
Nitrobenzene	ND		ug/kg	180	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	200	--	1
Butyl benzyl phthalate	ND		ug/kg	200	--	1
Di-n-butylphthalate	ND		ug/kg	200	--	1
Di-n-octylphthalate	ND		ug/kg	200	--	1
Diethyl phthalate	ND		ug/kg	200	--	1
Dimethyl phthalate	ND		ug/kg	86	--	1
Benzo(a)anthracene	240		ug/kg	120	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
Benzo(a)pyrene	180		ug/kg	160	--	1
Benzo(b)fluoranthene	210		ug/kg	120	--	1
Benzo(k)fluoranthene	ND		ug/kg	120	--	1
Chrysene	200		ug/kg	120	--	1
Acenaphthylene	ND		ug/kg	160	--	1
Anthracene	ND		ug/kg	120	--	1
Benzo(ghi)perylene	ND		ug/kg	160	--	1
Fluorene	ND		ug/kg	200	--	1
Phenanthrene	510		ug/kg	120	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	86	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	160	--	1
Pyrene	430		ug/kg	120	--	1
Aniline	ND		ug/kg	240	--	1
4-Chloroaniline	ND		ug/kg	200	--	1
Dibenzofuran	ND		ug/kg	200	--	1
2-Methylnaphthalene	ND		ug/kg	86	--	1
Acetophenone	ND		ug/kg	200	--	1
2,4,6-Trichlorophenol	ND		ug/kg	86	--	1
2-Chlorophenol	ND		ug/kg	86	--	1
2,4-Dichlorophenol	ND		ug/kg	86	--	1
2,4-Dimethylphenol	ND		ug/kg	86	--	1
2-Nitrophenol	ND		ug/kg	440	--	1
4-Nitrophenol	ND		ug/kg	290	--	1
2,4-Dinitrophenol	ND		ug/kg	980	--	1
Pentachlorophenol	ND		ug/kg	410	--	1
Phenol	ND		ug/kg	200	--	1
2-Methylphenol	ND		ug/kg	200	--	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	290	--	1
2,4,5-Trichlorophenol	ND		ug/kg	200	--	1

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		30-130
Phenol-d6	66		30-130
Nitrobenzene-d5	66		30-130
2-Fluorobiphenyl	73		30-130
2,4,6-Tribromophenol	94		30-130
4-Terphenyl-d14	59		30-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 01/15/21 02:01
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 01/14/21 11:20

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 11-12 Batch: WG1455017-1					
Acenaphthene	ND		ug/kg	130	--
1,2,4-Trichlorobenzene	ND		ug/kg	160	--
Hexachlorobenzene	ND		ug/kg	69	--
Bis(2-chloroethyl)ether	ND		ug/kg	69	--
2-Chloronaphthalene	ND		ug/kg	160	--
1,2-Dichlorobenzene	ND		ug/kg	160	--
1,3-Dichlorobenzene	ND		ug/kg	160	--
1,4-Dichlorobenzene	ND		ug/kg	69	--
3,3'-Dichlorobenzidine	ND		ug/kg	160	--
2,4-Dinitrotoluene	ND		ug/kg	69	--
2,6-Dinitrotoluene	ND		ug/kg	160	--
Azobenzene	ND		ug/kg	160	--
Fluoranthene	ND		ug/kg	99	--
4-Bromophenyl phenyl ether	ND		ug/kg	160	--
Bis(2-chloroisopropyl)ether	ND		ug/kg	69	--
Bis(2-chloroethoxy)methane	ND		ug/kg	180	--
Hexachlorobutadiene	ND		ug/kg	160	--
Hexachloroethane	ND		ug/kg	69	--
Isophorone	ND		ug/kg	150	--
Naphthalene	ND		ug/kg	160	--
Nitrobenzene	ND		ug/kg	150	--
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	--
Butyl benzyl phthalate	ND		ug/kg	160	--
Di-n-butylphthalate	ND		ug/kg	160	--
Di-n-octylphthalate	ND		ug/kg	160	--
Diethyl phthalate	ND		ug/kg	160	--
Dimethyl phthalate	ND		ug/kg	69	--
Benzo(a)anthracene	ND		ug/kg	99	--
Benzo(a)pyrene	ND		ug/kg	130	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 01/15/21 02:01
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 01/14/21 11:20

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 11-12 Batch: WG1455017-1					
Benzo(b)fluoranthene	ND		ug/kg	99	--
Benzo(k)fluoranthene	ND		ug/kg	99	--
Chrysene	ND		ug/kg	99	--
Acenaphthylene	ND		ug/kg	130	--
Anthracene	ND		ug/kg	99	--
Benzo(ghi)perylene	ND		ug/kg	130	--
Fluorene	ND		ug/kg	160	--
Phenanthrene	ND		ug/kg	99	--
Dibenzo(a,h)anthracene	ND		ug/kg	69	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	--
Pyrene	ND		ug/kg	99	--
Aniline	ND		ug/kg	200	--
4-Chloroaniline	ND		ug/kg	160	--
Dibenzofuran	ND		ug/kg	160	--
2-Methylnaphthalene	ND		ug/kg	69	--
Acetophenone	ND		ug/kg	160	--
2,4,6-Trichlorophenol	ND		ug/kg	69	--
2-Chlorophenol	ND		ug/kg	69	--
2,4-Dichlorophenol	ND		ug/kg	69	--
2,4-Dimethylphenol	ND		ug/kg	69	--
2-Nitrophenol	ND		ug/kg	360	--
4-Nitrophenol	ND		ug/kg	230	--
2,4-Dinitrophenol	ND		ug/kg	790	--
Pentachlorophenol	ND		ug/kg	330	--
Phenol	ND		ug/kg	160	--
2-Methylphenol	ND		ug/kg	160	--
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	--
2,4,5-Trichlorophenol	ND		ug/kg	160	--

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
 Analytical Date: 01/15/21 02:01
 Analyst: IM

Extraction Method: EPA 3546
 Extraction Date: 01/14/21 11:20

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 11-12 Batch: WG1455017-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	76		30-130
Phenol-d6	73		30-130
Nitrobenzene-d5	70		30-130
2-Fluorobiphenyl	84		30-130
2,4,6-Tribromophenol	93		30-130
4-Terphenyl-d14	92		30-130

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 11-12 Batch: WG1455017-2 WG1455017-3								
Acenaphthene	67		70		40-140	4		30
1,2,4-Trichlorobenzene	62		64		40-140	3		30
Hexachlorobenzene	85		85		40-140	0		30
Bis(2-chloroethyl)ether	60		62		40-140	3		30
2-Chloronaphthalene	66		67		40-140	2		30
1,2-Dichlorobenzene	60		63		40-140	5		30
1,3-Dichlorobenzene	60		64		40-140	6		30
1,4-Dichlorobenzene	60		62		40-140	3		30
3,3'-Dichlorobenzidine	53		56		40-140	6		30
2,4-Dinitrotoluene	72		72		40-140	0		30
2,6-Dinitrotoluene	73		72		40-140	1		30
Azobenzene	62		62		40-140	0		30
Fluoranthene	70		73		40-140	4		30
4-Bromophenyl phenyl ether	76		78		40-140	3		30
Bis(2-chloroisopropyl)ether	49		52		40-140	6		30
Bis(2-chloroethoxy)methane	62		66		40-140	6		30
Hexachlorobutadiene	69		69		40-140	0		30
Hexachloroethane	60		61		40-140	2		30
Isophorone	60		64		40-140	6		30
Naphthalene	64		65		40-140	2		30
Nitrobenzene	56		59		40-140	5		30
Bis(2-ethylhexyl)phthalate	74		73		40-140	1		30
Butyl benzyl phthalate	72		70		40-140	3		30

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 11-12 Batch: WG1455017-2 WG1455017-3								
Di-n-butylphthalate	76		75		40-140	1		30
Di-n-octylphthalate	70		71		40-140	1		30
Diethyl phthalate	69		68		40-140	1		30
Dimethyl phthalate	69		70		40-140	1		30
Benzo(a)anthracene	71		72		40-140	1		30
Benzo(a)pyrene	69		68		40-140	1		30
Benzo(b)fluoranthene	68		67		40-140	1		30
Benzo(k)fluoranthene	73		75		40-140	3		30
Chrysene	68		69		40-140	1		30
Acenaphthylene	73		73		40-140	0		30
Anthracene	72		73		40-140	1		30
Benzo(ghi)perylene	74		74		40-140	0		30
Fluorene	69		68		40-140	1		30
Phenanthrene	70		70		40-140	0		30
Dibenzo(a,h)anthracene	75		74		40-140	1		30
Indeno(1,2,3-cd)pyrene	72		70		40-140	3		30
Pyrene	72		72		40-140	0		30
Aniline	45		48		40-140	6		30
4-Chloroaniline	50		50		40-140	0		30
Dibenzofuran	68		69		40-140	1		30
2-Methylnaphthalene	66		64		40-140	3		30
Acetophenone	62		64		40-140	3		30
2,4,6-Trichlorophenol	76		76		30-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 11-12 Batch: WG1455017-2 WG1455017-3								
2-Chlorophenol	65		70		30-130	7		30
2,4-Dichlorophenol	69		74		30-130	7		30
2,4-Dimethylphenol	65		70		30-130	7		30
2-Nitrophenol	65		69		30-130	6		30
4-Nitrophenol	62		62		30-130	0		30
2,4-Dinitrophenol	62		64		30-130	3		30
Pentachlorophenol	66		66		30-130	0		30
Phenol	58		61		30-130	5		30
2-Methylphenol	66		70		30-130	6		30
3-Methylphenol/4-Methylphenol	69		72		30-130	4		30
2,4,5-Trichlorophenol	75		74		30-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	69		71		30-130
Phenol-d6	65		69		30-130
Nitrobenzene-d5	59		63		30-130
2-Fluorobiphenyl	72		73		30-130
2,4,6-Tribromophenol	89		90		30-130
4-Terphenyl-d14	83		81		30-130

PETROLEUM HYDROCARBONS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/15/21 11:14
Analyst: BAD
Percent Solids: 88%

Extraction Method:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Gasoline Range Organics - Westborough Lab						
---	--	--	--	--	--	--

Gasoline Range Organics	ND		ug/kg	2000	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	106		70-130
4-Bromofluorobenzene	99		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11 D
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/16/21 08:42
Analyst: MAD
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 01/15/21 02:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	929000		ug/kg	74200	--	2
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
o-Terphenyl	104			40-140		

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/15/21 11:45
Analyst: BAD
Percent Solids: 79%

Extraction Method:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Gasoline Range Organics - Westborough Lab						
---	--	--	--	--	--	--

Gasoline Range Organics	ND		ug/kg	2000	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	98		70-130
4-Bromofluorobenzene	96		70-130

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 01/16/21 06:57
Analyst: MAD
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 01/15/21 02:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	52800		ug/kg	41900	--	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
o-Terphenyl	111			40-140		

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8015D(M)
 Analytical Date: 01/15/21 11:37
 Analyst: MAD

Extraction Method: EPA 3546
 Extraction Date: 01/15/21 02:57

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Quantitation - Westborough Lab for sample(s): 11-12 Batch: WG1455226-1					
TPH (C10-C36)	ND		ug/kg	31400	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	85		40-140

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
 Analytical Date: 01/15/21 09:41
 Analyst: BAD

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 11-12 Batch: WG1455749-10					
Gasoline Range Organics	ND		ug/kg	2500	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	107		70-130
4-Bromofluorobenzene	102		70-130

Lab Control Sample Analysis**Batch Quality Control**

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 11-12 Batch: WG1455226-2								
TPH (C10-C36)	88		-		40-140	-		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	84				40-140

Lab Control Sample Analysis**Batch Quality Control**

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 11-12 Batch: WG1455749-8 WG1455749-9								
Gasoline Range Organics	113		111		80-120	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	116		115		70-130
4-Bromofluorobenzene	119		116		70-130

PCBS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 01/15/21 23:58
Analyst: JAW
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 01/14/21 20:36
Cleanup Method: EPA 3665A
Cleanup Date: 01/15/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/15/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	37.6	--	1	A
Aroclor 1221	ND		ug/kg	37.6	--	1	A
Aroclor 1232	ND		ug/kg	37.6	--	1	A
Aroclor 1242	ND		ug/kg	37.6	--	1	A
Aroclor 1248	ND		ug/kg	37.6	--	1	A
Aroclor 1254	ND		ug/kg	37.6	--	1	A
Aroclor 1260	ND		ug/kg	37.6	--	1	A
Aroclor 1262	ND		ug/kg	37.6	--	1	A
Aroclor 1268	ND		ug/kg	37.6	--	1	A
PCBs, Total	ND		ug/kg	37.6	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		30-150	B
Decachlorobiphenyl	72		30-150	B
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	48		30-150	A

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 01/16/21 00:11
Analyst: JAW
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 01/14/21 20:36
Cleanup Method: EPA 3665A
Cleanup Date: 01/15/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/15/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	40.5	--	1	A
Aroclor 1221	ND		ug/kg	40.5	--	1	A
Aroclor 1232	ND		ug/kg	40.5	--	1	A
Aroclor 1242	ND		ug/kg	40.5	--	1	A
Aroclor 1248	ND		ug/kg	40.5	--	1	A
Aroclor 1254	ND		ug/kg	40.5	--	1	A
Aroclor 1260	ND		ug/kg	40.5	--	1	A
Aroclor 1262	ND		ug/kg	40.5	--	1	A
Aroclor 1268	ND		ug/kg	40.5	--	1	A
PCBs, Total	ND		ug/kg	40.5	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	51		30-150	B
Decachlorobiphenyl	50		30-150	B
2,4,5,6-Tetrachloro-m-xylene	48		30-150	A
Decachlorobiphenyl	35		30-150	A

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8082A
Analytical Date: 01/15/21 22:42
Analyst: JAW

Extraction Method: EPA 3546
Extraction Date: 01/14/21 10:22
Cleanup Method: EPA 3665A
Cleanup Date: 01/15/21
Cleanup Method: EPA 3660B
Cleanup Date: 01/15/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 11-12 Batch: WG1454985-1						
Aroclor 1016	ND		ug/kg	32.5	--	A
Aroclor 1221	ND		ug/kg	32.5	--	A
Aroclor 1232	ND		ug/kg	32.5	--	A
Aroclor 1242	ND		ug/kg	32.5	--	A
Aroclor 1248	ND		ug/kg	32.5	--	A
Aroclor 1254	ND		ug/kg	32.5	--	A
Aroclor 1260	ND		ug/kg	32.5	--	A
Aroclor 1262	ND		ug/kg	32.5	--	A
Aroclor 1268	ND		ug/kg	32.5	--	A
PCBs, Total	ND		ug/kg	32.5	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	B
Decachlorobiphenyl	85		30-150	B
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	60		30-150	A

Lab Control Sample Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 11-12 Batch: WG1454985-2 WG1454985-3									
Aroclor 1016	67		70		40-140	4		30	A
Aroclor 1260	63		66		40-140	5		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		72		30-150	B
Decachlorobiphenyl	84		87		30-150	B
2,4,5,6-Tetrachloro-m-xylene	66		68		30-150	A
Decachlorobiphenyl	62		64		30-150	A

METALS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-01
 Client ID: TP-6 (0.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:20
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	34.6		mg/kg	2.24	--	1	01/13/21 23:40	01/18/21 22:07	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-02
 Client ID: TP-6 (5.0-9.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:30
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	18.6		mg/kg	2.32	--	1	01/13/21 23:40	01/18/21 15:33	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-03
 Client ID: TP-7 (0.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:35
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	33.0		mg/kg	2.29	--	1	01/13/21 23:40	01/18/21 15:37	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-04
 Client ID: TP-7 (5.0-9.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:45
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	25.1		mg/kg	2.32	--	1	01/13/21 23:40	01/18/21 21:40	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-05
 Client ID: TP-8 (0.5-2.5 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:05
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	29.9		mg/kg	2.05	--	1	01/13/21 23:40	01/18/21 21:44	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-06
 Client ID: TP-8 (2.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:15
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	56.3		mg/kg	2.14	--	1	01/13/21 23:40	01/18/21 21:49	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-07
 Client ID: TP-9 (0.5-2.5 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:35
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	895		mg/kg	2.09	--	1	01/13/21 23:40	01/18/21 21:53	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-08
 Client ID: TP-9 (2.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:42
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	129		mg/kg	2.09	--	1	01/13/21 23:40	01/18/21 21:58	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-09
 Client ID: TP-10 (0.5-2.5 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 09:50
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	10100		mg/kg	10.6	--	5	01/13/21 23:40	01/19/21 09:26	EPA 3050B	97,6010D	GD



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-10
 Client ID: TP-10 (2.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:00
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	366		mg/kg	2.18	--	1	01/13/21 23:40	01/18/21 14:52	EPA 3050B	97,6010D	GD



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11
 Client ID: COMP-3 (0.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	2.51		mg/kg	0.432	--	1	01/13/21 23:40	01/18/21 23:00	EPA 3050B	97,6010D	BV
Barium, Total	45.6		mg/kg	0.432	--	1	01/13/21 23:40	01/18/21 23:00	EPA 3050B	97,6010D	BV
Cadmium, Total	ND		mg/kg	0.432	--	1	01/13/21 23:40	01/18/21 23:00	EPA 3050B	97,6010D	BV
Chromium, Total	16.7		mg/kg	0.432	--	1	01/13/21 23:40	01/18/21 23:00	EPA 3050B	97,6010D	BV
Lead, Total	912		mg/kg	2.16	--	1	01/13/21 23:40	01/18/21 23:00	EPA 3050B	97,6010D	BV
Mercury, Total	0.253		mg/kg	0.084	--	1	01/13/21 23:43	01/18/21 17:26	EPA 7471B	97,7471B	VW
Selenium, Total	ND		mg/kg	2.16	--	1	01/13/21 23:40	01/18/21 23:00	EPA 3050B	97,6010D	BV
Silver, Total	ND		mg/kg	0.432	--	1	01/13/21 23:40	01/18/21 23:00	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
 Client ID: COMP-4 (5.0-9.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	1.55		mg/kg	0.488	--	1	01/13/21 23:40	01/18/21 23:04	EPA 3050B	97,6010D	BV
Barium, Total	29.6		mg/kg	0.488	--	1	01/13/21 23:40	01/18/21 23:04	EPA 3050B	97,6010D	BV
Cadmium, Total	ND		mg/kg	0.488	--	1	01/13/21 23:40	01/18/21 23:04	EPA 3050B	97,6010D	BV
Chromium, Total	12.2		mg/kg	0.488	--	1	01/13/21 23:40	01/18/21 23:04	EPA 3050B	97,6010D	BV
Lead, Total	25.8		mg/kg	2.44	--	1	01/13/21 23:40	01/18/21 23:04	EPA 3050B	97,6010D	BV
Mercury, Total	ND		mg/kg	0.090	--	1	01/13/21 23:43	01/18/21 17:29	EPA 7471B	97,7471B	VW
Selenium, Total	ND		mg/kg	2.44	--	1	01/13/21 23:40	01/18/21 23:04	EPA 3050B	97,6010D	BV
Silver, Total	ND		mg/kg	0.488	--	1	01/13/21 23:40	01/18/21 23:04	EPA 3050B	97,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-12 Batch: WG1454623-1										
Arsenic, Total	ND		mg/kg	0.400	--	1	01/13/21 23:40	01/18/21 15:10	97,6010D	GD
Barium, Total	ND		mg/kg	0.400	--	1	01/13/21 23:40	01/18/21 15:10	97,6010D	GD
Cadmium, Total	ND		mg/kg	0.400	--	1	01/13/21 23:40	01/18/21 15:10	97,6010D	GD
Chromium, Total	ND		mg/kg	0.400	--	1	01/13/21 23:40	01/18/21 15:10	97,6010D	GD
Lead, Total	ND		mg/kg	2.00	--	1	01/13/21 23:40	01/18/21 15:10	97,6010D	GD
Selenium, Total	ND		mg/kg	2.00	--	1	01/13/21 23:40	01/18/21 15:10	97,6010D	GD
Silver, Total	ND		mg/kg	0.400	--	1	01/13/21 23:40	01/18/21 15:10	97,6010D	GD

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 11-12 Batch: WG1454624-1										
Mercury, Total	ND		mg/kg	0.083	--	1	01/13/21 23:43	01/18/21 17:09	97,7471B	VW

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-12 Batch: WG1454623-2 WG1454623-3 SRM Lot Number: D109-540								
Arsenic, Total	104		103		70-130	1		30
Barium, Total	94		96		75-125	2		30
Cadmium, Total	89		98		75-125	10		30
Chromium, Total	84		87		70-130	4		30
Lead, Total	97		95		72-128	2		30
Selenium, Total	105		107		68-132	2		30
Silver, Total	98		96		68-131	2		30
MCP Total Metals - Mansfield Lab Associated sample(s): 11-12 Batch: WG1454624-2 WG1454624-3 SRM Lot Number: D109-540								
Mercury, Total	85		82		60-140	4		30

INORGANICS & MISCELLANEOUS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Test Material Information

Source of Material: Unknown
Description of Material: Non-Metallic - Damp Soil
Particle Size: Medium
Preliminary Burning Time (sec): 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	01/14/21 03:50	1,1030	AW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Test Material Information

Source of Material: Unknown
Description of Material: Non-Metallic - Damp Soil
Particle Size: Medium
Preliminary Burning Time (sec): 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	01/14/21 03:50	1,1030	AW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-01
Client ID: TP-6 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:20
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.8		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-02
Client ID: TP-6 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:30
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.6		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-03
Client ID: TP-7 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:35
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.8		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-04
Client ID: TP-7 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.9		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-05
Client ID: TP-8 (0.5-2.5 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.1		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-06
Client ID: TP-8 (2.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 11:15
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.8		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-07
Client ID: TP-9 (0.5-2.5 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:35
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.8		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-08
Client ID: TP-9 (2.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:42
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.1		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-09
Client ID: TP-10 (0.5-2.5 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 09:50
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-10
Client ID: TP-10 (2.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:00
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.2		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-11
Client ID: COMP-3 (0.5-5.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Specific Conductance @ 25 C	390		umhos/cm	10	--	1	-	01/13/21 02:00	1,9050A	AW
Solids, Total	87.9		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI
pH (H)	6.9		SU	-	NA	1	-	01/12/21 21:54	1,9045D	AS
Cyanide, Reactive	ND		mg/kg	10	--	1	01/14/21 07:22	01/14/21 09:17	125,7.3	JA
Sulfide, Reactive	ND		mg/kg	10	--	1	01/14/21 07:22	01/14/21 09:06	125,7.3	JA



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

SAMPLE RESULTS

Lab ID: L2101571-12
Client ID: COMP-4 (5.0-9.0 FT)
Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:45
Date Received: 01/12/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Specific Conductance @ 25 C	74		umhos/cm	10	--	1	-	01/13/21 02:00	1,9050A	AW
Solids, Total	78.9		%	0.100	NA	1	-	01/13/21 11:37	121,2540G	RI
pH (H)	6.4		SU	-	NA	1	-	01/12/21 21:54	1,9045D	AS
Cyanide, Reactive	ND		mg/kg	10	--	1	01/14/21 07:22	01/14/21 09:17	125,7.3	JA
Sulfide, Reactive	ND		mg/kg	10	--	1	01/14/21 07:22	01/14/21 09:06	125,7.3	JA



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 11-12 Batch: WG1454848-1										
Sulfide, Reactive	ND		mg/kg	10	--	1	01/14/21 07:22	01/14/21 09:05	125,7.3	JA
General Chemistry - Westborough Lab for sample(s): 11-12 Batch: WG1454849-1										
Cyanide, Reactive	ND		mg/kg	10	--	1	01/14/21 07:22	01/14/21 09:16	125,7.3	JA

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 11-12 Batch: WG1454267-1								
pH	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 11-12 Batch: WG1454323-1								
Specific Conductance	101		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 11-12 Batch: WG1454848-2								
Sulfide, Reactive	96		-		60-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 11-12 Batch: WG1454849-2								
Cyanide, Reactive	58		-		30-125	-		40

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2101571-01A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-01B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-02A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-02B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-03A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-03B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-04A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-04B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-05A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-05B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-06A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-06B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-07A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-07B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-08A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-08B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-09A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-09B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-10A	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-10B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-PB-6010T-10(180)
L2101571-11A	Vial MeOH preserved	A	NA		2.8	Y	Absent		TPH-GRO(14),MCP-8260HLW-10(14)
L2101571-11B	Vial water preserved	A	NA		2.8	Y	Absent	12-JAN-21 20:50	MCP-8260HLW-10(14)
L2101571-11C	Vial water preserved	A	NA		2.8	Y	Absent	12-JAN-21 20:50	MCP-8260HLW-10(14)

Project Name: BROCKTON
Project Number: 201.02017.001

Serial_No:01192115:52
Lab Number: L2101571
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2101571-11D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-CR-6010T-10(180),MCP-AS-6010T-10(180),MCP-7471T-10(28),MCP-CD-6010T-10(180),MCP-AG-6010T-10(180),MCP-SE-6010T-10(180),MCP-BA-6010T-10(180),MCP-PB-6010T-10(180)
L2101571-11F	Glass 500ml/16oz unpreserved	A	NA		2.8	Y	Absent		REACTS(14),MCP-8082-10(365),IGNIT-1030(14),MCP-8270-10(14),PH-9045(1),REACTCN(14),TPH-DRO-D(14),COND-9050(28)
L2101571-12A	Vial MeOH preserved	A	NA		2.8	Y	Absent		TPH-GRO(14),MCP-8260HLW-10(14)
L2101571-12B	Vial water preserved	A	NA		2.8	Y	Absent	12-JAN-21 20:50	MCP-8260HLW-10(14)
L2101571-12C	Vial water preserved	A	NA		2.8	Y	Absent	12-JAN-21 20:50	MCP-8260HLW-10(14)
L2101571-12D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2101571-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		MCP-CR-6010T-10(180),MCP-AS-6010T-10(180),MCP-7471T-10(28),MCP-CD-6010T-10(180),MCP-AG-6010T-10(180),MCP-SE-6010T-10(180),MCP-BA-6010T-10(180),MCP-PB-6010T-10(180)
L2101571-12F	Glass 500ml/16oz unpreserved	A	NA		2.8	Y	Absent		IGNIT-1030(14),MCP-8082-10(365),REACTS(14),MCP-8270-10(14),PH-9045(1),REACTCN(14),TPH-DRO-D(14),COND-9050(28)

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101571
Report Date: 01/19/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 125 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates IIIA, April 1998.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 17

Published Date: 4/28/2020 9:42:21 AM

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg. **EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

PAGE 1 OF 2

$$1/12/2$$

ALPHA Job #: 12101571

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Project Name: Brackton

Project Location: Parcel 109-044

Project #: 701.07017.001

Project Manager: Tracey Costa

ALPHA Quote #:

☒ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due:

Client: Benson Consulting

Address: 60 Valley St
Providence, RI

Phone: 978-978-2503

Email: tracy.costa@ransonenv.com

Additional Project Information:

Run TCLP Lead if trigger is exceeded (100mg/lce)

☒ ADE_x ☒ EMAIL☐ Same as Client info PO #: 12839

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program Criteria

ANALYSIS		SAMPLE INFO	
VOC: <input checked="" type="checkbox"/> 8260	<input type="checkbox"/> 624 <input type="checkbox"/> 524.2	Filtration	
SVOC: <input checked="" type="checkbox"/> ABN	<input type="checkbox"/> PAH	<input type="checkbox"/> Field	
METALS: <input type="checkbox"/> MCP 13	<input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	<input type="checkbox"/> Lab to do	
METALS: <input type="checkbox"/> RCRA5	<input checked="" type="checkbox"/> RCRA8	Preservation	
EPH: <input type="checkbox"/> Ranges & Targets	<input type="checkbox"/> PP13	<input type="checkbox"/> Lab to do	
VPH: <input type="checkbox"/> Ranges & Targets	<input type="checkbox"/> Ranges Only		
<input checked="" type="checkbox"/> PCB	<input type="checkbox"/> PEST		
TPH: <input type="checkbox"/> Quant Only	<input type="checkbox"/> Fingerprint		
Total lead			
Drywt-Total SVOC			
Volat-Heavy Metals			
Ignit/Hazardous			
Sample Comments			

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials	VOC:	SVOC:	METAL	METAL	EPH: C	VPH: C	PCB:	TPH: C	Total	Dry	Conc	Igal	Sample Comments
		Date	Time															
01571 - 01	TP-6 (0.5-5.0 FT)	1/12/2021	12:20	S	TZ										X	X		
-02	TP-6 (5.0-9.0 FT)	1/12/2021	12:30	S	TZ										X	X		
-03	TP-7 (0.5-5.0 FT)	1/21/2021	11:35	S	TZ										X	X		
-04	TP-7 (5.0-9.0 FT)	1/21/2021	11:45	S	TZ										X	X		
-05	TP-8 (0.5-2.5 FT)	1/21/2021	11:05	S	TZ										X	X		
-06	TP-8 (2.5-5.0 FT)	1/21/2021	11:15	S	TZ										X	X		
-07	TP-9 (0.5-2.5 FT)	1/21/2021	10:35	S	TZ										X	X		
-08	TP-9 (2.5-5.0 FT)	1/21/2021	10:42	S	TZ										X	X		
-09	TP-10 (0.5-2.5 FT)	1/21/2021	09:50	S	TZ										X	X		
-10	TP-10 (2.5-5.0 FT)	1/21/2021	10:00	S	TZ										X	X		
Container Type	Preservative																	
P= Plastic	A= None																	
A= Amber glass	B= HCl																	
V= Vial	C= HNO ₃																	

Container Type	Preservative
P= Plastic	A= None
A= Amber glass	B= HCl
V= Vial	C= HNO ₃
G= Glass	D= H ₂ SO ₄
B= Bacteria cup	E= NaOH
C= Cube	F= MeOH
O= Other	G= NaHSO ₄
E= Encore	H= Na ₂ S ₂ O ₃
D= BOD Bottle	I= Ascorbic Acid
	J= NH ₄ Cl
	K= Zn Acetate
	Q= Other

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All samples submitted are subject to Alpha's Terms and Conditions.
See reverse side.
FORM NO: 01-01 (rev. 12-Mar-2012)

**Method Blank Summary
Form 4
Volatiles**

Client	: Ransom Consulting, Inc.	Lab Number	: L2101571
Project Name	: BROCKTON	Project Number	: 201.02017.001
Lab Sample ID	: WG1455883-5	Lab File ID	: V27210115N05
Instrument ID	: VOA127		
Matrix	: SOIL	Analysis Date	: 01/15/21 14:52

Client Sample No.	Lab Sample ID	Analysis Date
WG1455883-3LCS	WG1455883-3	01/15/21 13:28
WG1455883-4LCSD	WG1455883-4	01/15/21 13:49
COMP-3 (0.5-5.0 FT)	L2101571-11	01/15/21 19:26
COMP-4 (5.0-9.0 FT)	L2101571-12	01/15/21 19:47

Calibration Verification Summary

Form 7

Volatiles

Client : Ransom Consulting, Inc.
 Project Name : BROCKTON
 Instrument ID : VOA127
 Lab File ID : V27210115N01
 Sample No : WG1455883-2
 Channel :

Lab Number : L2101571
 Project Number : 201.02017.001
 Calibration Date : 01/15/21 13:28
 Init. Calib. Date(s) : 01/14/21 01/14/21
 Init. Calib. Times : 18:35 21:23

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	93	0
Dichlorodifluoromethane	0.21	0.221	-	-5.2	20	114	0
Chloromethane	0.237	0.246	-	-3.8	20	109	.01
Vinyl chloride	0.256	0.27	-	-5.5	20	114	0
Bromomethane	40	48.946	-	-22.4*	20	114	0
Chloroethane	0.186	0.206	-	-10.8	20	114	0
Trichlorofluoromethane	0.479	0.485	-	-1.3	20	114	0
Ethyl ether	0.147	0.132	-	10.2	20	90	0
1,1-Dichloroethene	0.24	0.243	-	-1.3	20	109	0
Carbon disulfide	0.643	0.657	-	-2.2	20	114	0
Freon-113	0.235	0.237	-	-0.9	20	110	0
Acrolein	0.038	0.034*	-	10.5	20	89	0
Methylene chloride	40	38.659	-	3.4	20	97	0
Acetone	40	34.413	-	14	20	88	0
trans-1,2-Dichloroethene	0.284	0.28	-	1.4	20	107	-.01
Methyl acetate	0.162	0.14	-	13.6	20	92	0
Methyl tert-butyl ether	0.739	0.644	-	12.9	20	90	0
tert-Butyl alcohol	0.035	0.027*	-	22.9*	20	79	-.01
Diisopropyl ether	0.783	0.724	-	7.5	20	95	0
1,1-Dichloroethane	0.494	0.478	-	3.2	20	106	0
Halothane	0.199	0.201	-	-1	20	109	0
Acrylonitrile	0.084	0.074	-	11.9	20	88	-.01
Ethyl tert-butyl ether	0.812	0.725	-	10.7	20	91	-.01
Vinyl acetate	0.563	0.508	-	9.8	20	92	0
cis-1,2-Dichloroethene	0.331	0.309	-	6.6	20	99	0
2,2-Dichloropropane	0.418	0.444	-	-6.2	20	114	-.01
Bromochloromethane	0.153	0.139	-	9.2	20	94	0
Cyclohexane	0.421	0.432	-	-2.6	20	112	-.02
Chloroform	0.532	0.504	-	5.3	20	102	-.01
Ethyl acetate	0.235	0.202	-	14	20	88	-.01
Carbon tetrachloride	0.375	0.396	-	-5.6	20	114	0
Tetrahydrofuran	0.067	0.072	-	-7.5	20	116	0
Dibromofluoromethane	0.246	0.246	-	0	20	94	0
1,1,1-Trichloroethane	0.449	0.453	-	-0.9	20	111	0
2-Butanone	0.119	0.097*	-	18.5	20	87	-.01
1,1-Dichloropropene	0.377	0.381	-	-1.1	20	110	-.01
Benzene	40	39.278	-	1.8	20	102	0
tert-Amyl methyl ether	0.757	0.667	-	11.9	20	89	0
1,2-Dichloroethane-d4	0.296	0.279	-	5.7	20	91	-.01
1,2-Dichloroethane	0.41	0.357	-	12.9	20	93	0
Methyl cyclohexane	0.457	0.46	-	-0.7	20	107	0
Trichloroethene	0.299	0.289	-	3.3	20	104	-.01
Dibromomethane	0.184	0.165	-	10.3	20	94	0

* Value outside of QC limits.



Calibration Verification Summary

Form 7

Volatiles

Client : Ransom Consulting, Inc.
 Project Name : BROCKTON
 Instrument ID : VOA127
 Lab File ID : V27210115N01
 Sample No : WG1455883-2
 Channel :

Lab Number : L2101571
 Project Number : 201.02017.001
 Calibration Date : 01/15/21 13:28
 Init. Calib. Date(s) : 01/14/21 01/14/21
 Init. Calib. Times : 18:35 21:23

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,2-Dichloropropane	0.285	0.266	-	6.7	20	98	-.01
2-Chloroethyl vinyl ether	0.157	0.15	-	4.5	20	91	0
Bromodichloromethane	0.396	0.371	-	6.3	20	99	-.01
1,4-Dioxane	0.00394	0.00296*	-	24.9*	20	69	0
cis-1,3-Dichloropropene	0.45	0.419	-	6.9	20	97	-.01
Chlorobenzene-d5	1	1	-	0	20	94	0
Toluene-d8	1.279	1.268	-	0.9	20	93	0
Toluene	0.979	0.937	-	4.3	20	104	0
4-Methyl-2-pentanone	0.128	0.11	-	14.1	20	85	0
Tetrachloroethene	40	39.839	-	0.4	20	110	0
trans-1,3-Dichloropropene	0.487	0.487	-	0	20	96	0
Ethyl methacrylate	0.424	0.381	-	10.1	20	88	0
1,1,2-Trichloroethane	0.273	0.243	-	11	20	90	0
Chlorodibromomethane	0.356	0.345	-	3.1	20	97	0
1,3-Dichloropropane	0.576	0.526	-	8.7	20	93	0
1,2-Dibromoethane	0.339	0.297	-	12.4	20	91	0
2-Hexanone	0.229	0.184	-	19.7	20	81	0
Chlorobenzene	40	39.06	-	2.3	20	100	0
Ethylbenzene	1.907	1.875	-	1.7	20	106	0
1,1,1,2-Tetrachloroethane	0.367	0.354	-	3.5	20	97	0
p/m Xylene	0.764	0.753	-	1.4	20	105	0
o Xylene	80	79.283	-	0.9	20	102	0
Styrene	1.256	1.196	-	4.8	20	100	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	92	0
Bromoform	40	38.566	-	3.6	20	94	0
Isopropylbenzene	3.538	3.601	-	-1.8	20	105	0
4-Bromofluorobenzene	0.89	0.879	-	1.2	20	93	0
Bromobenzene	0.888	0.835	-	6	20	96	0
n-Propylbenzene	4.174	4.408	-	-5.6	20	108	0
1,4-Dichlorobutane	0.995	0.887	-	10.9	20	90	0
1,1,2,2-Tetrachloroethane	0.784	0.694	-	11.5	20	90	0
4-Ethyltoluene	3.472	3.648	-	-5.1	20	108	0
2-Chlorotoluene	2.504	2.59	-	-3.4	20	108	0
1,3,5-Trimethylbenzene	3.018	3.15	-	-4.4	20	106	0
1,2,3-Trichloropropane	0.666	0.583	-	12.5	20	89	0
trans-1,4-Dichloro-2-buten	0.209	0.201	-	3.8	20	99	0
4-Chlorotoluene	2.651	2.679	-	-1.1	20	103	0
tert-Butylbenzene	2.607	2.685	-	-3	20	105	0
1,2,4-Trimethylbenzene	2.961	3.074	-	-3.8	20	105	0
sec-Butylbenzene	3.867	4.096	-	-5.9	20	106	0
p-Isopropyltoluene	3.26	3.532	-	-8.3	20	108	0
1,3-Dichlorobenzene	1.769	1.807	-	-2.1	20	103	0
1,4-Dichlorobenzene	1.796	1.787	-	0.5	20	102	0

* Value outside of QC limits.



Calibration Verification Summary

Form 7

Volatiles

Client : Ransom Consulting, Inc.
 Project Name : BROCKTON
 Instrument ID : VOA127
 Lab File ID : V27210115N01
 Sample No : WG1455883-2
 Channel :

Lab Number : L2101571
 Project Number : 201.02017.001
 Calibration Date : 01/15/21 13:28
 Init. Calib. Date(s) : 01/14/21 01/14/21
 Init. Calib. Times : 18:35 21:23

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
p-Diethylbenzene	1.85	2.057	-	-11.2	20	111	0
n-Butylbenzene	2.823	3.266	-	-15.7	20	113	0
1,2-Dichlorobenzene	1.691	1.65	-	2.4	20	99	0
1,2,4,5-Tetramethylbenzene	2.704	2.851	-	-5.4	20	104	0
1,2-Dibromo-3-chloropropan	40	38.186	-	4.5	20	91	0
1,3,5-Trichlorobenzene	1.187	1.271	-	-7.1	20	106	0
Hexachlorobutadiene	0.617	0.666	-	-7.9	20	106	0
1,2,4-Trichlorobenzene	1.146	1.179	-	-2.9	20	103	0
Naphthalene	2.753	2.526	-	8.2	20	89	0
1,2,3-Trichlorobenzene	1.109	1.092	-	1.5	20	99	0

* Value outside of QC limits.





ANALYTICAL REPORT

Lab Number:	L2101957
Client:	Ransom Consulting, Inc. 60 Valley Street Building F, Suite 106 Providence, RI 02909
ATTN:	Tracey Costa
Phone:	(401) 433-2160
Project Name:	BROCKTON
Project Number:	201.02017.001
Report Date:	01/25/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2101957-01	TP-2 (2.5-4.5 FT)	SOIL	PARCELS 109-54/SS	01/11/21 10:05	01/11/21
L2101957-02	TP-3 (2.5-5.0 FT)	SOIL	PARCELS 109-54/SS	01/11/21 11:25	01/11/21
L2101957-03	TP-5 (0.5-5.0 FT)	SOIL	PARCELS 109-54/SS	01/11/21 13:20	01/11/21
L2101957-04	COMP-1 (0.5-5.0 FT)	SOIL	PARCELS 109-54/SS	01/11/21 13:40	01/11/21

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Caitlin Walukevich

Title: Technical Director/Representative

Date: 01/25/21

QC OUTLIER SUMMARY REPORT

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
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There are no QC Outliers associated with this report.

METALS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

SAMPLE RESULTS

Lab ID: L2101957-01
 Client ID: TP-2 (2.5-4.5 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 10:05
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/20/21 04:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	ND		mg/l	0.500	--	1	01/22/21 09:37	01/22/21 13:43	EPA 3015	1,6010D	EW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

SAMPLE RESULTS

Lab ID: L2101957-02
 Client ID: TP-3 (2.5-5.0 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 11:25
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/20/21 04:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	0.542		mg/l	0.500	--	1	01/22/21 09:37	01/22/21 13:48	EPA 3015	1,6010D	EW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

SAMPLE RESULTS

Lab ID: L2101957-03
 Client ID: TP-5 (0.5-5.0 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:20
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/20/21 04:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	1.45		mg/l	0.500	--	1	01/22/21 09:37	01/22/21 13:52	EPA 3015	1,6010D	EW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

SAMPLE RESULTS

Lab ID: L2101957-04
 Client ID: COMP-1 (0.5-5.0 FT)
 Sample Location: PARCELS 109-54/SS

Date Collected: 01/11/21 13:40
 Date Received: 01/11/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/20/21 04:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	ND		mg/l	0.500	--	1	01/22/21 09:37	01/22/21 13:57	EPA 3015	1,6010D	EW



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01-04 Batch: WG1457465-1										
Lead, TCLP	ND		mg/l	0.500	--	1	01/22/21 09:37	01/22/21 13:34	1,6010D	EW

Prep Information

Digestion Method: EPA 3015
TCLP/SPLP Extraction Date: 01/18/21 13:55

Lab Control Sample Analysis
Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1457465-2								
Lead, TCLP	104		-		75-125	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1457465-3 QC Sample: L2101957-01 Client ID: TP-2 (2.5-4.5 FT)												
Lead, TCLP	ND	5.1	5.80	114		-	-		75-125	-		20

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Duplicate Analysis

Batch Quality Control

Lab Number: L2101957
Report Date: 01/25/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1457465-4 QC Sample: L2101957-01 Client ID: TP-2 (2.5-4.5 FT)						
Lead, TCLP	ND	ND	mg/l	NC		20

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2101957-01B	Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		-
L2101957-01X	Plastic 120ml HNO3 preserved Extracts	A	NA		4.5	Y	Absent		PB-CI(180)
L2101957-01X9	Tumble Vessel	A	NA		4.5	Y	Absent		-
L2101957-02B	Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		-
L2101957-02X	Plastic 120ml HNO3 preserved Extracts	A	NA		4.5	Y	Absent		PB-CI(180)
L2101957-02X9	Tumble Vessel	A	NA		4.5	Y	Absent		-
L2101957-03B	Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		-
L2101957-03X	Plastic 120ml HNO3 preserved Extracts	A	NA		4.5	Y	Absent		PB-CI(180)
L2101957-03X9	Tumble Vessel	A	NA		4.5	Y	Absent		-
L2101957-04F	Glass 500ml/16oz unpreserved	A	NA		4.5	Y	Absent		-
L2101957-04X	Plastic 120ml HNO3 preserved Extracts	A	NA		4.5	Y	Absent		PB-CI(180)
L2101957-04X9	Tumble Vessel	A	NA		4.5	Y	Absent		-

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
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Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2101957
Report Date: 01/25/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 17

Department: **Quality Assurance**

Published Date: 4/28/2020 9:42:21 AM

Title: **Certificate/Approval Program Summary**

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.**EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 1/10/21

ALPHA Job #: 42101367

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Ransom Consulting

Address: LED Valley St
Providence, RI

Phone: 978-998-2503

Email: tracyy.costa@ransomware.com

Additional Project Information:

Run TCLP lead if trigger is exceeded (100 mg/kg)

Project Information

Project Name: Bucklew

Project Location: Parcels 109-54/55

Project #: 201.02017.001

Project Manager: Tracey Costa

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

<input type="checkbox"/> Same as Client Info	PO #: 12836
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Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program Criteria

ANALYSIS	SAMPLE INFO
VOC: <input checked="" type="checkbox"/> B-600 <input checked="" type="checkbox"/> B-604 <input checked="" type="checkbox"/> B-3207	Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do
METALS: <input checked="" type="checkbox"/> B-601 <input checked="" type="checkbox"/> B-602	PRESERVATION <input type="checkbox"/> Field <input type="checkbox"/> Lab to do
METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	
EPH: <input type="checkbox"/> DRCA3 <input type="checkbox"/> DRCA8 <input type="checkbox"/> PPT13	
VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
<input checked="" type="checkbox"/> PCB <input checked="" type="checkbox"/> PEH	
TTH: <input type="checkbox"/> B-601 Only <input type="checkbox"/> B-602 Only	
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[illegible]

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A = None
B = HCl
C = HNO₃
D = H₂SO₄
E = NaOH
F = MeOH
G = NaHSO₄
H = Na₂S₂O₃
I = Ascorbic Acid
J = NH₄Cl
K = Zn Acetate
Q = Other

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

All samples submitted are subject to Alpha's Terms and Conditions.
See reverse side.

FORM NO. 01-01 (rev. 12-Mar-2012)



ANALYTICAL REPORT

Lab Number:	L2102750
Client:	Ransom Consulting, Inc. 60 Valley Street Building F, Suite 106 Providence, RI 02909
ATTN:	Tracey Costa
Phone:	(401) 433-2160
Project Name:	BROCKTON
Project Number:	201.02017.001
Report Date:	01/26/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2102750-01	TP-10 (2.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 10:00	01/12/21
L2102750-02	TP-9 (0.5-2.5 FT)	SOIL	PARCEL 109-044	01/12/21 10:35	01/12/21
L2102750-03	TP-9 (2.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 10:42	01/12/21
L2102750-04	COMP-3 (0.5-5.0 FT)	SOIL	PARCEL 109-044	01/12/21 12:05	01/12/21
L2102750-05	TP-10 (0.5-2.5 FT)	SOIL	PARCEL 109-044	01/12/21 09:50	01/12/21

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Caitlin Walukevich

Title: Technical Director/Representative

Date: 01/26/21

QC OUTLIER SUMMARY REPORT

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
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There are no QC Outliers associated with this report.

METALS

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2102750-01
 Client ID: TP-10 (2.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:00
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/21/21 04:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	9.55		mg/l	0.500	--	1	01/22/21 12:10	01/25/21 14:41	EPA 3015	1,6010D	GD



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2102750-02
 Client ID: TP-9 (0.5-2.5 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:35
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/21/21 04:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	6.37		mg/l	0.500	--	1	01/22/21 12:10	01/25/21 22:50	EPA 3015	1,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2102750-03
 Client ID: TP-9 (2.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 10:42
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/21/21 04:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	0.577		mg/l	0.500	--	1	01/22/21 12:10	01/25/21 22:54	EPA 3015	1,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2102750-04
 Client ID: COMP-3 (0.5-5.0 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 12:05
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/21/21 04:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	5.05		mg/l	0.500	--	1	01/22/21 12:10	01/25/21 22:59	EPA 3015	1,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

SAMPLE RESULTS

Lab ID: L2102750-05
 Client ID: TP-10 (0.5-2.5 FT)
 Sample Location: PARCEL 109-044

Date Collected: 01/12/21 09:50
 Date Received: 01/12/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

TCLP/SPLP Ext. Date: 01/21/21 04:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	78.3		mg/l	0.500	--	1	01/22/21 12:10	01/25/21 23:22	EPA 3015	1,6010D	BV



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01-05 Batch: WG1457724-1										
Lead, TCLP	ND		mg/l	0.500	--	1	01/22/21 12:10	01/25/21 13:03	1,6010D	GD

Prep Information

Digestion Method: EPA 3015
TCLP/SPLP Extraction Date: 01/21/21 04:45

Lab Control Sample Analysis

Batch Quality Control

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-05 Batch: WG1457724-2								
Lead, TCLP	105		-		75-125	-		20

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler **Custody Seal**
A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2102750-01B	Glass 60mL/2oz unpreserved	NA	NA			Y	Absent		-
L2102750-01X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.8	Y	Absent		PB-CI(180)
L2102750-01X9	Tumble Vessel	A	NA		2.8	Y	Absent		-
L2102750-02B	Glass 60mL/2oz unpreserved	NA	NA			Y	Absent		-
L2102750-02X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.8	Y	Absent		PB-CI(180)
L2102750-02X9	Tumble Vessel	A	NA		2.8	Y	Absent		-
L2102750-03B	Glass 60mL/2oz unpreserved	NA	NA			Y	Absent		-
L2102750-03X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.8	Y	Absent		PB-CI(180)
L2102750-03X9	Tumble Vessel	A	NA		2.8	Y	Absent		-
L2102750-04A	Glass 500ml/16oz unpreserved	A	NA		2.8	Y	Absent		-
L2102750-04X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.8	Y	Absent		PB-CI(180)
L2102750-04X9	Tumble Vessel	A	NA		2.8	Y	Absent		-
L2102750-05B	Glass 60mL/2oz unpreserved	NA	NA			Y	Absent		-
L2102750-05X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.8	Y	Absent		PB-CI(180)
L2102750-05X9	Tumble Vessel	A	NA		2.8	Y	Absent		-

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: BROCKTON
Project Number: 201.02017.001

Lab Number: L2102750
Report Date: 01/26/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 17

Published Date: 4/28/2020 9:42:21 AM

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**EPA TO-12** Non-methane organics**EPA 3C** Fixed gases**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg. **EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1** Hg.**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

C2102750 CG 1/20/21



8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-622-9300

CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 1/12/21

ALPHA Job #: C2101571

Project Information

Project Name: Brockton
Project Location: Parcel 109-044
Project #: 201.02017.001
Project Manager: Tracy Coste
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEX ☒ EMAIL

Billing Information

☐ Same as Client info PO #: 12839

Client Information

Client: Branson Consulting
Address: 60 Valley St
Providence, RI
Phone: 401-978-0988
Email: tracy.coste@bransonenv.com

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State/Fed Program Criteria

ANALYSIS										SAMPLE INFO		TOTAL BOTTLES
VOC: C260	C261	C262	C263	C264	C265	C266	C267	C268	C269	Filtration		
SVOC: C270	C271	C272	C273	C274	C275	C276	C277	C278	C279	Field		
METALS: C280	C281	C282	C283	C284	C285	C286	C287	C288	C289	Lab to do		
METALS: C290	C291	C292	C293	C294	C295	C296	C297	C298	C299	Preservation		
EPH: C300	C301	C302	C303	C304	C305	C306	C307	C308	C309	Lab to do		
VPH: C310	C311	C312	C313	C314	C315	C316	C317	C318	C319			
C-PCB	C-PEST	C-PCB	C-PEST	C-PCB	C-PEST	C-PCB	C-PEST	C-PCB	C-PEST			
TPH: C320	C321	C322	C323	C324	C325	C326	C327	C328	C329			
Total Lead										TCLP Lead		
Organic Solvent										Acidity, Reactivity		
Inorganic Solvent										Hazardous Waste		
TCLP Lead										Sample Comments		

Additional Project Information:

Run TCLP Lead if trigger is exceeded (100mg/kg)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials										
		Date	Time												
01571	TP-6 (0.5-5.0 FT)	1/12/21	12:20	S	TZ										
-02	TP-6 (5.0-9.0 FT)	1/12/21	12:30	S	TZ										
-03	TP-7 (0.5-5.0 FT)	1/12/21	11:35	S	TZ										
-04	TP-7 (5.0-9.0 FT)	1/12/21	11:45	S	TZ										
-05	TP-8 (0.5-2.5 FT)	1/12/21	11:05	S	TZ										
-06	TP-8 (2.5-5.0 FT)	1/12/21	11:15	S	TZ										
02150-02	TP-9 (0.5-2.5 FT)	1/12/21	10:35	S	TZ									X	
-03	TP-9 (2.5-5.0 FT)	1/12/21	10:42	S	TZ									X	
-05	TP-10 (0.5-2.5 FT)	1/12/21	09:50	S	TZ									X	
-01	TP-10 (2.5-5.0 FT)	1/12/21	10:00	S	TZ									X	
Container Type		Preservative		Container Type		Preservative		Container Type		Preservative		Container Type		Preservative	
P= Plastic		A= None													
A= Amber glass		B= HCl													
V= Vial		C= HNO ₃													
G= Glass		D= H ₂ SO ₄													
B= Bacteria cup		E= NaOH													
C= Cube		F= MeOH													
O= Other		G= NaHSO ₄													
E= Encore		H= Na ₂ S ₂ O ₃													
D= BOD Bottle		I= Ascorbic Acid													
		J= NH ₄ Cl													
		K= Zn Acetate													
		O= Other													

Relinquished By:

Date/Time

Received By:

Date/Time

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO. 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY						PAGE <u>2</u> OF <u>2</u>		Date Rec'd in Lab: <u>1/12/21</u>		ALPHA Job #: <u>2101571</u>																																																																																																										
 WESTBORD, MA TEL: 508-896-9220 FAX: 508-898-9193				MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3266				Project Information		Report Information - Data Deliverables		Billing Information																																																																																																								
								Project Name: <u>Brockton</u>		<input checked="" type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ADEx <input type="checkbox"/> Add'l Deliverables		<input type="checkbox"/> Same as Client info PO #: <u>12839</u>																																																																																																								
Client Information				Project Location: <u>Parcel 109-044</u>				Regulatory Requirements/Report Limits																																																																																																												
Client: <u>Hanson Consulting</u>				Project #: <u>201.02017.001</u>				State /Fed Program _____		Criteria _____																																																																																																										
Address: <u>60 Valley St</u> <u>Providence RI</u>				Project Manager: <u>Tracy Costa</u>				MA MCP PRESUMPTIVE CERTAINTY — CT REASONABLE CONFIDENCE PROTO																																																																																																												
Phone: <u>978 998-7503</u>				ALPHA Quote #:				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Are MCP Analytical Methods Required?																																																																																																												
Fax: _____				Turn-Around Time				<input type="checkbox"/> Yes <input type="checkbox"/> No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)																																																																																																												
Email: <u>tracy.costa@hansonm.com</u>				<input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH (only confirmed if pre-approved)				<input type="checkbox"/> Yes <input type="checkbox"/> No Are CT RCP (Reasonable Confidence Protocols) Required?																																																																																																												
<input type="checkbox"/> These samples have been previously analyzed by Alpha				Date Due: _____ Time: _____				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">ANALYSIS</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">VOC BLEND</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">SVOCs</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">PCBs & Metals</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">PCBs</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">PAH Condensed</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">Inorg Lead</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">Cyanide</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">TSS</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">Turbidity</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">Residual</th> <th style="writing-mode: vertical-rl; transform: rotate(180deg);">TCU Lead</th> <th colspan="2" style="vertical-align: top;">SAMPLE HANDLING</th> </tr> <tr> <td colspan="12"></td> <td>Filtration _____</td> </tr> <tr> <td colspan="12"></td> <td><input type="checkbox"/> Done</td> </tr> <tr> <td colspan="12"></td> <td><input type="checkbox"/> Not needed</td> </tr> <tr> <td colspan="12"></td> <td><input type="checkbox"/> Lab to do Preservation</td> </tr> <tr> <td colspan="12"></td> <td><input type="checkbox"/> Lab to do</td> </tr> <tr> <td colspan="12"></td> <td>(Please specify below)</td> </tr> <tr> <td colspan="12"></td> <td>Sample Specific Comments</td> </tr> </table>				ANALYSIS	VOC BLEND	SVOCs	PCBs & Metals	PCBs	PAH Condensed	Inorg Lead	Cyanide	TSS	Turbidity	Residual	TCU Lead	SAMPLE HANDLING														Filtration _____													<input type="checkbox"/> Done													<input type="checkbox"/> Not needed													<input type="checkbox"/> Lab to do Preservation													<input type="checkbox"/> Lab to do													(Please specify below)													Sample Specific Comments
ANALYSIS	VOC BLEND	SVOCs	PCBs & Metals	PCBs	PAH Condensed	Inorg Lead	Cyanide					TSS	Turbidity	Residual	TCU Lead	SAMPLE HANDLING																																																																																																				
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Other Project Specific Requirements/Comments/Detection Limits: If MS is required, indicate in Sample Specific Comments which samples and what tests MS to be performed. (Note: All CAM methods for Inorganic analyses require MS every 20 soil samples) <u>Run TCLP lead if trigger is exceeded (100 mg/kg)</u>																																																																																																																				
ALPHA Lab ID (Lab Use Only)		Sample ID		Collection Date Time		Sample Matrix	Sampler's Initials																																																																																																													
<u>01571</u>		<u>COMP-3 (0.5-5.0 ft)</u>		<u>1/12/2021 12:05</u>		<u>DS</u>	<u>TZ</u>	X	X	X	X	X	X																																																																																																							
<u>00750-04</u>		<u>COMP-4 (5.0-9.0 ft)</u>		<u>1/12/2021 12:45</u>		<u>S</u>	<u>TZ</u>	X	X	X	X	X	X																																																																																																							
PLEASE ANSWER QUESTIONS ABOVE!																																																																																																																				
IS YOUR PROJECT MA MCP or CT RCP?								Container Type		<u>G G G G G P G G</u>																																																																																																										
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Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.																																																																																																																				

FORM NO: 01-01 (rev. 18-Jan-2010)

APPENDIX D

EFI Report

Test Pit Excavation and Waste Characterization

BPA Lot D (Parcels 109-054 and 109-055) and BPA Parking Lot E (Parcel 109-044)

Franklin Street

Brockton, Massachusetts

January 25, 2021

Ms. Tracey Costa
Senior Project Manager
Ransom Consulting, LLC
60 Valley Street
Providence, Rhode Island 02909

RE: **Limited Asbestos Survey Report**
Test Pits at Lots 109-44, 109-54, and 109-55
Brockton, Massachusetts
EFI Project No.: 020.01384

Dear Ms. Costa:

Pursuant to your request, EFI Global, Inc. (EFI) performed a limited asbestos survey during test pit excavation activities conducted on Lots 109-44, 109-54, and 109-55 in Brockton, Massachusetts (Site). This limited asbestos survey report summarizes activities conducted at the site to evaluate for the possible presence of buried asbestos-containing materials (ACM).

BACKGROUND

The site consists of three lots located in Downtown Brockton, which are bounded by Court Street to the north, Petronelli Way to the south, and mixed use commercial/residential properties to the east and west. Franklin Street transects the site in an east/west direction. For the purposes of this survey, the portion of the site located to the north of Franklin Street is designated the Court Street Lot (109-44) and the portion of the site located to the south of Franklin Street is designated the Petronelli Way Lot (109-54 & 109-55).

According to Ransom personnel, evidence of suspect construction and demolition (C&D) debris is present at the site. In support of environmental remediation activities being managed by Ransom Consulting, LLC (Ransom), EFI performed a visual inspection in each test pit area and collected bulk samples of any observed suspect asbestos-containing materials from buried C&D debris. Additionally, EFI collected soil samples from each test pit excavation to assess for the potential presence of unconsolidated asbestos fibers that may be present. Per Ransom, EFI also submitted samples of C&D debris observed in test pit TP-10 for lead analysis.

SURVEY PROCEDURES

The visual inspection and sampling was conducted at the site on January 11-12, 2021 by Massachusetts Department of Labor Standards (MassDLS) certified asbestos inspectors Mr. David Johnson and Mr. Jack Young (Certification Nos.: AI900923 and AI900986, respectively) of EFI. Test pits were excavated under the direction of a Ransom representative, which directed the test pit excavation activities.

OBSERVATIONS

The following table summarizes EFI's visual observations and samples collected from each test pit:

Summary of Visual Observations, Soil and C&D Samples Lots 109-44, 109-54, and 109-55 Brockton, Massachusetts January 11-12, 2021		
Petronelli Lot		
Test Pit #	Soil Sample Number and Depth	Observations of C&D Debris and Sample Number
TP-1	TP-1 (0.5-1.5')	None
TP-2	TP-2 (0.5-2.5')	None
	TP-2 (2.5-4.5')	None
TP-3	TP-3 (0.5-2.5')	None
	TP-3 (2.5-5')	None
TP-4	TP-4 (0.5-5')	Suspect White Flaky Material (005A,B) Suspect Hard Grey Material (006A,B)
	TP-4 (5-9.5')	None
TP-5	TP-5 (0-5')	Cementitious Shingles (007A,B)
Court Street Lot		
Test Pit #	Soil Sample Number and Depth	Observations of C&D Debris and Sample Number
TP-6	TP-6 (0-5')	Cementitious shingles (017A,B)
	TP-6 (5-10')	None
TP-7	TP-7 (0-5')	Roofing Tar (016A,B)
	TP-7 (5-10')	None
TP-8	TP-8 (0-2.5')	None
	TP-8 (2.5-5')	Roofing Tar (012A,B) Soft White Material (013A,B))
TP-9	TP-9 (0-2.5')	Plaster (007A,B)
	TP-9 (2.5-5')	"Lab Benchtop"-Type Material (008A,B) Layered Roofing Tar (009A,B) Soft White Material (010A,B,C,D)
TP-10	TP-10 (0-2.5')	Layered Roofing (003A,B)* Plaster (004A,B)* Red Backed Tar (005A,B)*
	TP-10 (2.5-5')	None

*These materials were also submitted for lead analysis.

Samples of suspect ACMs identified during the survey were collected and submitted under chain of custody protocol to Asbestos Identification Laboratory (AIL) of Woburn, Massachusetts, a Massachusetts-licensed laboratory. AIL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos fiber analysis which is administered by the National Institute of Standards and Testing (NIST). The samples were analyzed using polarized light microscopy (PLM) with dispersion staining via

EPA's "Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116). Asbestos concentrations for the samples were determined by visual area estimation. Commonwealth of Massachusetts Department of Environmental Protection (MassDEP) asbestos regulations define an ACM as any material containing greater than or equal to one percent asbestos. Note that soil samples were analyzed via EPA Region 1 Soil Method.

SURVEY RESULTS

The following suspect ACMs sampled by EFI were reported by AIL as containing greater than or equal to one percent asbestos, the Massachusetts limit for classification as ACM:

- Cementitious Shingles - Test Pit 5 (0-5')
- Cementitious Shingles - Test Pit 6 (0-5')

The following suspect ACMs sampled by EFI were reported by AIL as containing no detectable concentration of asbestos:

- All soil samples collected throughout the site
- White flaky material - Test Pit 4 (0.5-5')
- Hard grey material – Test Pit 4 (0.5-5')
- Roofing tar – Test Pit 7 (0-5') and Test Pit 8 (2.5-5')
- Soft white material – Test Pit 8 (2.5-5') and Test Pit 9 (2.5-5')
- "Lab Benchtop"- type material– Test Pit 9 (2.5-5")
- Layered roofing – Test Pit 9 (2.5-5") and Test Pit 10 (0-2')
- Plaster – Test Pit 9 (0-2.5") and Test Pit 10 (0-2')
- Red backed tar – Test Pit 10 (0-2.5')

A copy of the laboratory report prepared by AIL and photographs of the building materials sampled by EFI are attached.

LEAD TESTING AND METHODOLOGY

Methodology and Analytical Methods

Per client request, EFI submitted samples of observed C&D debris from TP-10 to determine total lead content. Samples of layered roofing, plaster, and red-backed tar were submitted to SanAir Technologies Laboratory (SanAir) of Powhatan, Virginia, with a standard 3-day turnaround time. SanAir analyzed the samples using atomic absorption spectrometry (AAS) in accordance with US EPA method SW846-7420.

Summary of Findings

A total of six samples of building debris from test pit TP-10 were submitted for laboratory analysis. The lead content of the samples ranged from 244 - 13,130 milligrams per kilogram (mg/kg). The highest concentrations detected were in the red backed tar (11,940 – 13,130 mg/kg). The lead paint laboratory analytical report is presented in Attachment C. All Contractors performing work that disturbs any concentration of lead must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62, Lead.

Regulatory Implications and Recommendations

Regulatory Implications

OSHA defines any detectable concentration of lead in paint as a potential lead exposure hazard to workers performing construction or demolition work that disturbs these surfaces, as even small concentrations of lead can result in elevated employee exposures. The level of exposure varies based upon the lead concentration, type of work performed, method of removal, and other workplace conditions. Since these conditions can vary greatly, the OSHA Lead Construction Standard (29 CFR 1926.62) requires exposure monitoring or the use of historical or objective monitoring data to ensure that employee exposures do not exceed the OSHA action level of 30 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) and the OSHA permissible exposure limit (PEL) of 50 $\mu\text{g}/\text{m}^3$.

OSHA requires that contractors monitor employee exposures if lead will be disturbed during construction or demolition. Contractors and employers of staff who may disturb these materials are obligated to perform a negative exposure assessment in accordance with OSHA regulations to document that exposure to lead does not exceed the OSHA action level and the PEL.

OSHA states that the employer must treat employees as if they would be exposed above the PEL until the employer 1) performs an exposure assessment that documents that employees are not exposed above the PEL or 2) can supply prior data regarding the same type of work which may exempt them from the standard.

The OSHA Lead Construction Standard applies to many construction activities including the following:

- manual demolition of structures, manual scraping, manual sanding, and use of heat gun where lead-containing coatings or paints are present;
- abrasive blasting enclosure movement and removal;
- power tool cleaning;
- lead burning;
- using lead-containing mortar or spray painting with lead-containing paint;
- abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present;
- cleanup activities where dry expendable abrasive are used; and
- any other task the employer believes may cause exposure in excess of the PEL.

The contractor must provide respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until an exposure assessment has determined that the work activity will result in an exposure below the PEL. Additional requirements under the standard include a written compliance program, as well as, record keeping.

The contractor must also characterize and dispose of all dust, debris, and blast media (if applicable) in accordance with US EPA and MassDLS regulations. This includes waste

characterization of dust, debris and blast media generated during paint removal activities via the toxicity characteristic leaching procedure (TCLP).

Waste Disposal Implications

Waste disposal is governed by the EPA's Resource Conservation and Recovery Act (RCRA) regulations, which distinguish between solid wastes and hazardous wastes. Solid wastes include general construction debris and are subject to minimum handling, transportation, and landfill disposal requirements under RCRA regulations. Hazardous wastes, including certain lead-containing materials, are subject to restrictions designed to prevent the hazardous materials from entering the environment. Lead waste is classified as hazardous or non-hazardous based on the results of the TCLP testing. The leachability test measures whether or not lead leaches from the waste in excess of the regulated level of 5.0 mg/L. If the results of the TCLP analysis exceed this level, the waste must be handled, transported and disposed as a hazardous waste in an approved waste site, reclamation facility or incinerator site. EPA's regulations require the TCLP test be performed so that it represents the matrix and material of the waste stream.

Recommendations

It is recommended that lead TCLP samples be collected and analyzed prior to disposal. If the TCLP results for the C&D materials associated with TP-10 are below 5.0 mg/L, the materials can be disposed as general construction debris. If the TCLP results are greater than 5.0 mg/L, the materials must be disposed as a lead hazardous waste.

It is also recommended that construction or demolition personnel conducting work at the facility comply with applicable OSHA Lead Construction Standard requirements during all construction activities at the Site.

CONCLUSIONS AND RECOMMENDATIONS

Asbestos-containing cementitious shingles were identified in Test Pits 5 and 6 during the investigation. No other ACMs were identified in the soil or in the bulk materials observed and sampled by EFI. EFI recommends that the asbestos containing cementitious shingles identified in Test Pits 5 and 6 be removed and properly disposed by a Massachusetts licensed asbestos abatement contractor, in accordance with Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Department of Labor Standards asbestos regulations prior to the start of site work activities that may impact the materials. In addition, EFI recommends at least one inch of surrounding soil be removed during the process and additional visual inspection be performed to ensure no additional suspect debris.

Prior to the start of excavation activities that are anticipated to impact the identified ACMs buried in the soil at the Site, a Non-Traditional Asbestos Abatement Work Practice Approval Plan and associated application (BWP AQ 36) must be submitted to MassDEP for approval.

If suspect ACMs other than the above-referenced materials are identified during excavation activities, EFI recommends that they be assumed ACM until sampled by a Massachusetts-certified asbestos inspector and analyzed by a Massachusetts-licensed asbestos analytical laboratory.

A total of six samples of building debris from test pit TP-10 were submitted for laboratory analysis. The lead content of the samples ranged from 244 - 13,130 milligrams per kilogram (mg/kg). The highest concentrations detected were in the red backed tar (11,940 – 13,130 mg/kg).

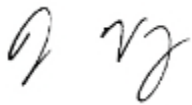
It is recommended that lead TCLP samples be collected and analyzed prior to disposal. If the TCLP results for the C&D materials associated with TP-10 are below 5.0 mg/L, the materials can be disposed as general construction debris. If the TCLP results are greater than 5.0 mg/L, the materials must be disposed as a lead hazardous waste. All Contractors performing work that disturbs any concentration of lead must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62, Lead.

LIMITATIONS

EFI's survey was limited to the areas where the test pits were excavated as noted above and is not intended to be a comprehensive investigation of the subsurface conditions at the site. Our survey did not include an evaluation of potential transite water/sewer piping. All test pit excavations were selected by, and conducted under the direction of, Ransom personnel who were present onsite during excavation activities.

EFI is pleased to provide environmental consulting services to Ransom Consulting, LLC. If you have any questions regarding the contents of this report, or are in need of additional information, please do not hesitate to contact either of the undersigned at 800-659-1202. Thank you for the opportunity to serve your environmental needs.

Sincerely,
EFI Global, Inc.



John Vaz
Senior Project Manager



Jennifer L. Archacki
Environmental Service Line Principal

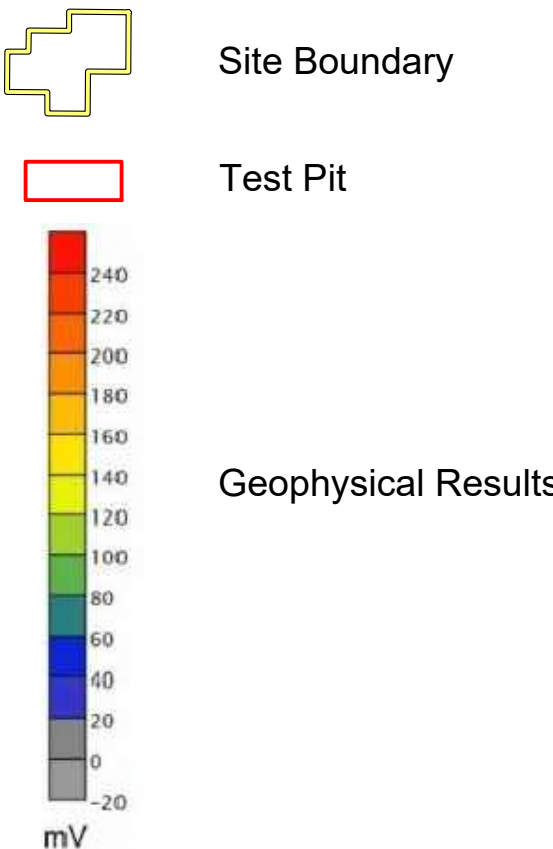
Attachments:

Attachment A – Site Plan
Attachment B – Asbestos Laboratory Analytical Reports
Attachment C – Lead Laboratory Analytical Report

ATTACHMENT A

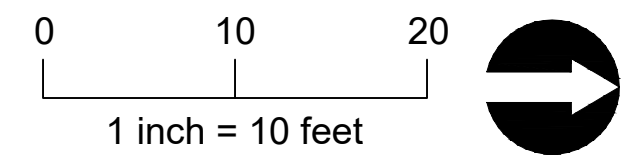
SITE PLAN

Legend & Notes



- Notes:
- Sources: BCS Group. New Street Roadway Construction & Petronelli Way Improvements. 11/28/2018., TPI Environmental. Geophysical Survey - Lot 109-044, Brockton, MA. 3/30/20., & Geophysical Survey - Lots 109-054 and 1095-055, Brockton, MA. 3/30/20.
 - Some features are approximate in location and scale.
 - This plan has been prepared for The City of Brockton. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.
 - Color contoured data indicate relative EM 61 response, i.e. significant buried metallic structures. The EM survey was conducted throughout accessible areas, as indicated by black borderline.

Scale and Orientation



Prepared For

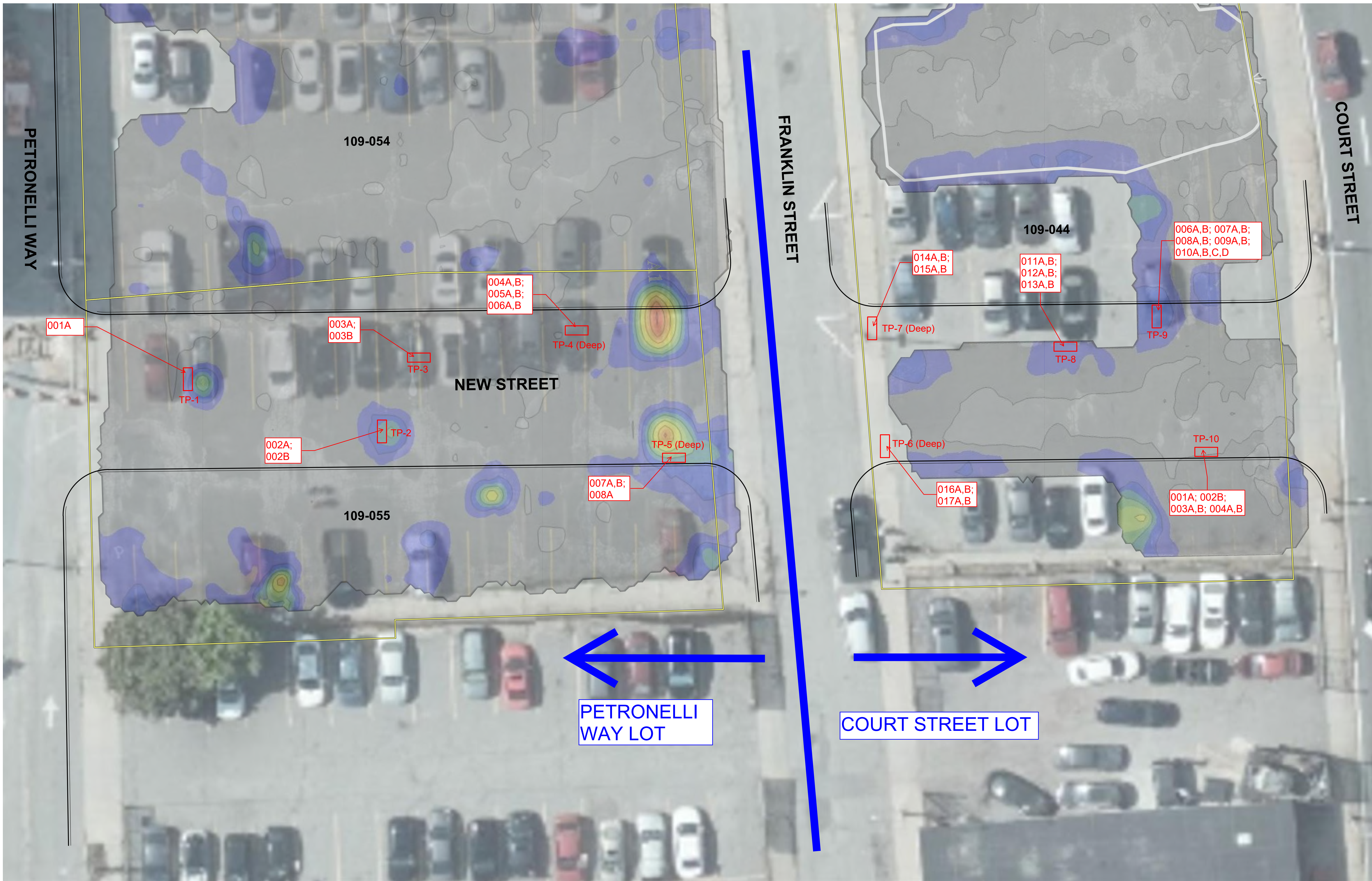
City of Brockton
45 School Street
Brockton, Massachusetts

Site Address

Parcels: 109-044, 109-054 & 109-055
Brockton, Massachusetts

201.02017.001 Jan 2021

Figure 2
Test Pit Locations-Parcels 109-044 and 109-054/055



ATTACHMENT B

ASBESTOS LABORATORY ANALYTICAL REPORTS



Asbestos Identification Laboratory

165 New Boston St., Ste 227

Woburn, MA 01801

781-932-9600

Web: www.asbestosidentificationlab.com

Email: mikemanning@asbestosidentificationlab.com

Batch:

59559



January 15, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Near Court St., Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-12
Work Received: 2021-01-12
Work Analyzed: 2021-01-14

Analysis Method: EPA REGION ONE SOIL

Dear John Vaz,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you John Vaz for your business.

Michael Manning
Owner/Director

January 15, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Near Court St., Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-12
Work Received: 2021-01-12
Work Analyzed: 2021-01-14

Analysis Method: EPA REGION ONE SOIL

FieldID LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
01A 661753	Soil	TP-10 0-2.5'	brown	Non-Fibrous 100	None Detected
02B 661754	Soil	TP-10 2.5'-5'	brown	Non-Fibrous 100	None Detected
06A 661755	Soil	TP-9 0-2'	brown	Non-Fibrous 100	None Detected
06B 661756	Soil	TP9 2.5'-5'	brown	Cellulose 2	None Detected
				Non-Fibrous 98	
11A 661757	Soil	TP8 0-2.5'	brown	Cellulose 2	None Detected
				Non-Fibrous 98	
11B 661758	Soil	TP-8 2.5'-5'	brown	Non-Fibrous 100	None Detected
14A 661759	Soil	TP-7 0-5'	brown	Non-Fibrous 100	None Detected
14B 661760	Soil	TP-7 5'-10'	brown	Cellulose 2	None Detected
				Non-Fibrous 98	
16A 661761	Soil	TP-6 0-5'	brown	Non-Fibrous 100	None Detected
16B 661762	Soil	TP-6 5'-10'	brown	Non-Fibrous 100	None Detected

Client: <u>EFL</u>		Page <u>1</u> of <u>3</u>	
Address: _____		Turnaround Time Sample Method	
Project Site & #: <u>Near Court St.</u>		<input type="checkbox"/> Less 3 Hrs	<input type="checkbox"/> Bulk
Phone / email address: <u>Brockton, MA</u>		<input type="checkbox"/> Same Day	<input checked="" type="checkbox"/> Soil
<u>030.01304</u>		<input type="checkbox"/> Next Day	<input type="checkbox"/> Wipe
Contact: <u>John Yez</u>		<input checked="" type="checkbox"/> No Day	<input type="checkbox"/> Point Count
Relinquish by/date: _____		Stop on 1st Positive? Yes/No	
Received by/date: <u>Deborah Russell 1/19/21</u>		Notify Method: Mail/E-Mail/Verbal	
# of Samples Received: <u>18</u>		Analyzed By: <u>Michael J. Thomas</u>	
BATCH# <u>59559</u>		Date: <u>1/17/2021</u>	
Rev 06/16			

[illegible]

[illegible]



BOSTON NORTH

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	John.vaz@efiglobal.com	Bill To:	Accounts Payable				
Company:	EFI Global, Inc.	Address:	Same				
Address:	155 West Street Suite 6	City, State, Zip:	Same				
City, State, Zip:	Wilmington, MA 01887	Telephone:	800-659-1202				
		Fax:	978-688-5494				
Project Information							
Project No. and Description:	020.01384 - Near Court St., Brockton, MA						
Email Report to:	Lynda.McDermott@efiglobal.com;						
Alternate (Your Email):							
Requested Turnaround Time:							
<input type="checkbox"/> 3 hour	<input type="checkbox"/> 6 hour	<input type="checkbox"/> 1 day (24hr)	<input type="checkbox"/> 2 day (48hr)	<input checked="" type="checkbox"/> 3 day (72 hr)	<input type="checkbox"/> 4 day (96 hr)	<input type="checkbox"/> 1 week	<input type="checkbox"/> 2 week
Media and Methodology				Check for Positive Stop: <input type="checkbox"/>			
Type of Analysis:							
Notes:	Please analyze all plaster and joint compound samples.						

Sample ID	Type of Material	Location
01A	Soil	TP-10 0-2.5'
02B	Soil	TP-10 2.5'-5'
03A,B	Layered roofing	TP-10 - 0-2'
04A,B	Plaster	TP-10 - 0-2'
05A,B	Red backed Tar	TP-10 0-2'
06A	Soil	TP-9 0-2'
07AB	Plaster	TP-9 0-2'
08B	Soil	TP-9 2.5'-5'
08A,B	Lab top type material	TP-9 2.5'-5'
09A,B	Layered roofing Tar	TP-9 2.5'-5'
10A,B,C,D	Soft white material	TP-9 2.5'-5'

Total Number of Samples Submitted: 33

Date Collected: 11/12/21

Samplers Name: David Johnson

Samplers Signature: [Signature]

Relinquished By (EFI): [Signature]

Date: 11/12/21

Time: 2:30 PM

Received By (Lab): [Signature]

Date: 11/12/21

Time:

Page 2 of 2



Asbestos Identification Laboratory

165 New Boston St., Ste 227

Woburn, MA 01801

781-932-9600

Web: www.asbestosidentificationlab.com

Email: mikemanning@asbestosidentificationlab.com

Batch:

59634



January 15, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Near Court St., Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-12
Work Received: 2021-01-12
Work Analyzed: 2021-01-15

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

Dear John Vaz,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you John Vaz for your business.

Michael Manning
Owner/Director

January 15, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Near Court St., Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-12
Work Received: 2021-01-12
Work Analyzed: 2021-01-15

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

FieldID LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
03A	Layered Roofing	TP-10 - 0-2'	black	Cellulose 40	None Detected
662506				Non-Fibrous 60	
03B	Layered Roofing	TP-10 - 0-2'	black	Cellulose 45	None Detected
662507				Non-Fibrous 55	
04A	Plaster	TP-10 - 0-2'	multi	Non-Fibrous 100	None Detected
662508					
04B	Plaster	TP-10 - 0-2'	multi	Non-Fibrous 100	None Detected
662509					
05A	Red Backed Tar	TP-10 - 0-2'	black	Cellulose 15	None Detected
662510				Non-Fibrous 85	
05B	Red Backed Tar	TP-10 - 0-2'	black	Cellulose 20	None Detected
662511				Non-Fibrous 80	
07A	Plaster	TP-9 - 0-2'	multi	Non-Fibrous 100	None Detected
662512					
07B	Plaster	TP-9 - 0-2'	multi	Non-Fibrous 100	None Detected
662513					
08A	Lab Top Type Material	TP-9 - 2.5' - 5'	black	Non-Fibrous 100	None Detected
662514					
08B	Lab Top Type Material	TP-9 - 2.5' - 5'	black	Non-Fibrous 100	None Detected
662515					
09A	Layered Roofing Tar	TP-9 - 2.5' - 5'	black	Cellulose 30	None Detected
662516				Non-Fibrous 70	
09B	Layered Roofing Tar	TP-9 - 2.5' - 5'	black	Cellulose 20	None Detected
662517				Non-Fibrous 80	
10A	Soft White Material	TP-9 - 2.5' - 5'	multi	Non-Fibrous 100	None Detected
662518					
10B	Soft White Material	TP-9 - 2.5' - 5'	multi	Non-Fibrous 100	None Detected
662519					

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
10C	Soft White Material	TP-9 - 2.5' - 5'	multi	Non-Fibrous 100	None Detected
662520					
10D	Soft White Material	TP-9 - 2.5' - 5'	multi	Non-Fibrous 100	None Detected
662521					
12A	Roofing Tar	TP-8 - 2.5' - 5'	black	Non-Fibrous 100	None Detected
662522					
12B	Roofing Tar	TP-8 - 2.5' - 5'	black	Non-Fibrous 100	None Detected
662523					
13A	Soft White Material	TP-8 - 2.5' - 5'	multi	Non-Fibrous 100	None Detected
662524					
13B	Soft White Material	TP-8 - 2.5' - 5'	multi	Non-Fibrous 100	None Detected
662525					
15A	Roof Tar	TP-7 - 0 - 5'	black	Non-Fibrous 100	None Detected
662526					
15B	Roof Tar	TP-7 - 0 - 5'	black	Non-Fibrous 100	None Detected
662527					
17A	Transite Shingle	TP-6 - 0 - 5'	gray	Non-Fibrous 70	Detected Chrysotile 30
662528					
17B	Transite Shingle	TP-6 - 0 - 5'	gray	Non-Fibrous 80	Detected Chrysotile 20
662529					

Client: EFT

Address: _____

Project Site & #: Near Court St.,

Phone / email address: Brockton, MA

020. 01384

Contact: John Vaz

Relinquish by/date: _____

Received by/date: John Vaz 11/21/21

of Samples Received: 1

CHAIN OF CUSTODY
EPA/600/R-93/116

Asbestos Identification Lab

165 New Boston St.

Suite 227

Woburn, MA 01801

(781)932-9600

www.asbestosidentificationlab.com

Date Sampled: _____



Page 1 of 6

Turnaround Time Sample Method

☐ Less 3 Hrs ☒ Bulk

☐ Same Day ☐ Soil

☐ Next Day ☐ Wipe

☒ 3 Days ☐ Point Count

Stop on 1st Positive? Yes/No

Notify Method: Mail/E-Mail/Verbal

Analyzed By: Michael Brown

Date: 11/15/2021

Lab ID# (Lab Use Only)		Field ID/ (Client Reference)	Temp In Celsius = <u>21</u>	Stereo Scope					Optical Properties							RI		Non-Asbestos Percentage (%)											
Material / Location				% of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	=	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous					
Material		03A	Location	03A N	W	FCN		Chrysotile																					
Location								Amosite																					
								Crocidolite																					
								Tremolite																					
								Anthrophyllite																					
Material		03B	Location	03B N	W	FCN		Actinolite																					
Location								Chrysotile																					
								Amosite																					
								Crocidolite																					
								Tremolite																					
Material		03A	Location	03A N	W	FCN		Anthrophyllite																					
Location								Actinolite																					
								Chrysotile																					
								Amosite																					
								Crocidolite																					
Material		03B	Location	03B N	W	FCN		Tremolite																					
Location								Anthrophyllite																					
								Actinolite																					
								Chrysotile																					
								Amosite																					
Material		03A	Location	03A N	W	FCN		Crocidolite																					
Location								Tremolite																					
								Anthrophyllite																					
								Actinolite																					
								Chrysotile																					
Material		03B	Location	03B N	W	FCN		Amosite																					
Location								Crocidolite																					
								Tremolite																					
								Anthrophyllite																					
								Actinolite																					
Material		03A	Location	03A N	W	FCN		Chrysotile																					
Location								Amosite																					
								Crocidolite																					
								Tremolite																					
								Anthrophyllite																					
Material		03B	Location	03B N	W	FCN		Actinolite																					
Location								Chrysotile																					
								Amosite																					
								Crocidolite																					
								Tremolite																					
Material		03A	Location	03A N	W	FCN		Anthrophyllite																					
Location								Actinolite																					
								Chrysotile																					
								Amosite																					
								Crocidolite																					
Material		03B	Location	03B N	W	FCN		Tremolite																					
Location								Anthrophyllite																					
								Actinolite																					
								Chrysotile																					
								Amosite																					
Material		03A	Location	03A N	W	FCN		Crocidolite																					
Location								Tremolite																					
								Anthrophyllite																					
								Actinolite																					
								Chrysotile																					
Material		03B	Location	03B N	W	FCN		Amosite																					
Location								Crocidolite																					
								Tremolite																					
								Anthrophyllite																					
								Actinolite																					
Material		03A	Location	03A N	W	FCN		Chrysotile																					
Location								Amosite																					
								Crocidolite																					
								Tremolite																					
								Anthrophyllite																					
Material		03B	Location	03B N	W	FCN		Actinolite																					
Location								Chrysotile																					
								Amosite																					
								Crocidolite																					
								Tremolite																					
Material		03A	Location	03A N	W	FCN		Anthrophyllite																					
Location								Actinolite																					
								Chrysotile																					
								Amosite																					
								Crocidolite																					
Material		03B	Location	03B N	W	FCN		Tremolite																					
Location								Anthrophyllite																					
								Actinolite																					
								Chrysotile																					
								Amosite																					
Material		03A	Location	03A N	W	FCN		Crocidolite																					
Location								Tremolite																					
								Anthrophyllite																					
								Actinolite																					
								Chrysotile																					
Material		03B	Location	03B N	W	FCN		Amosite																					
Location								Crocidolite																					
								Tremolite																					
								Anthrophyllite																					
								Actinolite																					
Material		03A	Location	03A N	W	FCN		Chrysotile																					
Location								Amosite																					
								Crocidolite																					
								Tremolite																					
								Anthrophyllite																					
Material		03B	Location	03B N	W	FCN		Actinolite																					
Location								Chrysotile																					
								Amosite																					
								Crocidolite																					
								Tremolite																					
Material		03A	Location	03A N	W	FCN		Anthrophyllite																					
Location								Actinolite																					
								Chrysotile																					
								Amosite																					
								Crocidolite																					
Material		03B	Location	03B N	W	FCN		Tremolite																					

[illegible]

TABLE 1

[illegible]

Omni-vary

[illegible]



BOSTON NORTH

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	john.vaz@efiglobal.com	Bill To:	Accounts Payable				
Company:	EFI Global, Inc.	Address:	Same				
Address:	155 West Street Suite 6	City, State, Zip:	Same				
City, State, Zip:	Wilmington, MA 01887	Telephone:	800-659-1202				
		Fax:	978-688-5494				
Project Information							
Project No. and Description:	020.01384 - Near Court St., Brockton, MA						
Email Report to:	Lynda.McDermott@efiglobal.com;						
Alternate (Your Email):							
Requested Turnaround Time:							
<input type="checkbox"/> 3 hour	<input type="checkbox"/> 6 hour	<input type="checkbox"/> 1 day (24hr)	<input type="checkbox"/> 2 day (48hr)	<input checked="" type="checkbox"/> 3 day (72 hr)	<input type="checkbox"/> 4 day (96 hr)	<input type="checkbox"/> 1 week	<input type="checkbox"/> 2 week
Media and Methodology							
Type of Analysis:				Check for Positive Stop: <input type="checkbox"/>			
Notes:	Please analyze all plaster and joint compound samples.						

Sample ID	Type of Material	Location
01A	Soil	TP-10 0-2.5'
02B	Soil	TP-10 2.5'-5'
03A,B	Layered roofing	TP-10 - 0-2'
04A,B	Plaster	TP-10 - 0-2'
05A,B	Red backed Tar	TP-10 0-2'
06A	Soil	TP-9 0-2'
07A,B	Plaster	TP-9 0-2'
08B	Soil	TP-9 2.5'-5'
08A,B	Lab top type material	TP-9 2.5'-5'
09A,B	Layered roofing Tar	TP-9 2.5'-5'
10A,B,C,D	Soft white material	TP-9 2.5'-5'

Total Number of Samples Submitted: 33 34

Date Collected: 1/12/21

Samplers Name: David Johnson

Samplers Signature: [Signature]

Relinquished By (EFI): [Signature]

Date: 1/12/21

Time: 2:30 PM

Received By (Lab): [Signature]

Date: 1/19/21

Time:



Asbestos Identification Laboratory

165 New Boston St., Ste 227

Woburn, MA 01801

781-932-9600

Web: www.asbestosidentificationlab.com

Email: mikemanning@asbestosidentificationlab.com

Batch:

59568



January 14, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Lot at Petronelli Way, Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-11
Work Received: 2021-01-11
Work Analyzed: 2021-01-13

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

Dear John Vaz,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

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- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you John Vaz for your business.

Michael Manning
Owner/Director

January 14, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Lot at Petronelli Way, Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-11
Work Received: 2021-01-11
Work Analyzed: 2021-01-13

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

FieldID LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
05A 661851	Suspect White Flaky Material	Test Pit 4 2'-3'	white	Non-Fibrous 100	None Detected
05B 661852	Suspect White Flaky Material	Test Pit 4 2'-3'	white	Non-Fibrous 100	None Detected
06A 661853	Suspect Hard Gray Material	Test Pit 4 2'-3'	gray	Non-Fibrous 100	None Detected
06B 661854	Suspect Hard Gray Material	Test Pit 4 2'-3'	gray	Non-Fibrous 100	None Detected
07A 661855	Transite Type Shingle	Test Pit 5 0-5'	brown	Non-Fibrous 70	Detected Chrysotile 30
07B 661856	Transite Type Shingle	Test Pit 5 0-5'	brown	Non-Fibrous 70	Detected Chrysotile 30

Thursday 14 January
Analyzed by:

Lauren Oakes

End of Report
Batch: 59568

Page 1 of 1

[illegible]



BOSTON NORTH

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	john.vaz@efiglobal.com	Bill To:	Accounts Payable				
Company:	EFI Global, Inc.	Address:	Same				
Address:	155 West Street Suite 6	City, State, Zip:	Same				
City, State, Zip:	Wilmington, MA 01887	Telephone:	800-659-1202				
		Fax:	978-688-5494				
Project Information							
Project No. and Description:	020.01324 Lot at Petronelli Way, Brockton, MA						
Email Report to:	Lynda.McDermott@efiglobal.com;						
Alternate (Your Email):							
Requested Turnaround Time:							
<input type="checkbox"/> 3 hour	<input type="checkbox"/> 6 hour	<input type="checkbox"/> 1 day (24hr)	<input type="checkbox"/> 2 day (48hr)	<input checked="" type="checkbox"/> 3 day (72 hr)	<input type="checkbox"/> 4 day (96 hr)	<input type="checkbox"/> 1 week	<input type="checkbox"/> 2 week
Media and Methodology				Check for Positive Stop: <input type="checkbox"/>			
Type of Analysis:	PLM Asbestos Soil						
Notes:	Please analyze all plaster and joint compound samples.						

Sample ID	Type of Material	Location
01A	Soil	Test Pit # TP-1 6"-1.5'
02A	Soil	Test Pit TP-2 .5'-2.5'
02B	Soil	Test Pit TP-2 2.5'-4.5'
03A	Soil	Test Pit TP-3 0.5'-2.5'
03B	Soil	Test Pit TP-3 2.5'-5.0'
04A	Soil	Test Pit TP-4 0-5'
04B	Soil	Test Pit TP-4 5'-9.5'
05A,B	Soil Suspect White Flaky Material	Test Pit 4 2'-3'
06A,B	Suspect hard Gray material	Test Pit 4 2'-3'
07A,B	Transite Type Shingle	Test Pit 5 - 0-5'
08A	Soil Sample	Test Pit 5 - 0-5'

Total Number of Samples Submitted: 14

Date Collected: 1/11/21

Samplers Name: David Johnson

Samplers Signature: [Signature]

Relinquished By (EFI): Jack Young

Date: 1/11/21 Time:

Received By (Lab): [Signature]

Date: 1/11/21 Time:



Asbestos Identification Laboratory

165 New Boston St., Ste 227

Woburn, MA 01801

781-932-9600

Web: www.asbestosidentificationlab.com

Email: mikemanning@asbestosidentificationlab.com

Batch:

59602



January 14, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Lot at Petronelli Way, Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-11
Work Received: 2021-01-11
Work Analyzed: 2021-01-13

Analysis Method: EPA REGION ONE SOIL

Dear John Vaz,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

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- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you John Vaz for your business.

Michael Manning
Owner/Director

January 14, 2021

John Vaz
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Name: Lot at Petronelli Way, Brockton, MA
Project Number: 020.01384
Date Sampled: 2021-01-11
Work Received: 2021-01-11
Work Analyzed: 2021-01-13

Analysis Method: EPA REGION ONE SOIL

FieldID LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
01A 662095	Soil	Test Pit #TP-1 6"-1.5'	brown	Non-Fibrous 100	None Detected
02A 662096	Soil	Test Pit #TP-2 .5'-2.5'	brown	Cellulose 2 Non-Fibrous 98	None Detected
02B 662097	Soil	Test Pit #TP-2 2.5'-4.5'	brown	Non-Fibrous 100	None Detected
03A 662098	Soil	Test Pit #TP-3 0.5'-2.5'	brown	Non-Fibrous 100	None Detected
03B 662099	Soil	Test Pit #TP-3 2.5'-5.0'	brown	Non-Fibrous 100	None Detected
04A 662100	Soil	Test Pit #TP-4 0-5'	brown	Cellulose 2 Non-Fibrous 98	None Detected
04B 662101	Soil	Test Pit #TP-4 5'-9.5'	brown	Non-Fibrous 100	None Detected
08A 662102	Soil	Test Pit #TP-5 0-5'	brown	Cellulose 2 Non-Fibrous 98	None Detected

Thursday 14 January

Analyzed by:



End of Report

Batch: 59602

Page 1 of 1

[illegible]



BOSTON NORTH

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	john.vaz@efiglobal.com	Bill To:	Accounts Payable
Company:	EFI Global, Inc.	Address:	Same
Address:	155 West Street Suite 6	City, State, Zip:	Same
City, State, Zip:	Wilmington, MA 01887	Telephone:	800-659-1202
		Fax:	978-688-5494
Project Information			
Project No. and Description:	020.01384	Lot at Petronelli Way, Brockton, MA	
Email Report to:	Lynda.McDermott@efiglobal.com;		
Alternate (Your Email):			
Requested Turnaround Time:			
<input type="checkbox"/> 3hour	<input type="checkbox"/> 6 hour	<input type="checkbox"/> 1 day (24hr)	<input type="checkbox"/> 2 day (48hr)
		<input checked="" type="checkbox"/> 3 day (72 hr)	<input type="checkbox"/> 4 day (96 hr)
			<input type="checkbox"/> 1 week
			<input type="checkbox"/> 2 week
Media and Methodology			
Type of Analysis:	PLM Asbestos Soil		Check for Positive Stop: <input type="checkbox"/>
Notes:	Please analyze all plaster and joint compound samples.		

Sample ID	Type of Material	Location
01A	Soil	Test Pit # TP-1 6'-1.5'
02A	Soil	Test Pit TP-2 .5'-2.5'
02B	Soil	Test Pit TP-2 2.5'-4.5'
03A	Soil	Test Pit TP-3 0.5'-2.5'
03B	Soil	Test Pit TP-3 2.5'-5.0'
04A	Soil	Test Pit TP-4 0-5'
04B	Soil	Test Pit TP-4 5'-9.5'
05A,B	Suspect White Flaky Material	Test Pit 4 2'-3'
06A,B	Suspect hard Gray material	Test Pit 4 2'-3'
07A,B	Transite Type Shingle	Test Pit 5 - 0-5'
08A	Soil Sample	Test Pit 5 - 0-5'

Total Number of Samples Submitted: 14 Date Collected: 1/11/21

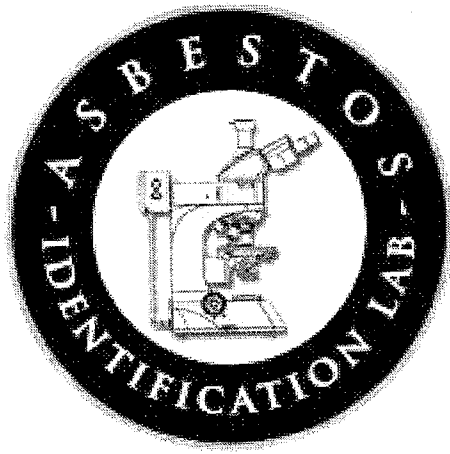
Samplers Name: David Johnson Samplers Signature: David Johnson

Relinquished By (EFI): Jack Young Date: 1/11/21 Time: _____

Received By (Lab): mbonni Date: 1/11/21 Time: _____

ATTACHMENT C

LEAD LABORATORY ANALYTICAL REPORT



Mike Manning
Asbestos Identification Lab
165 New Boston Street, Ste 227
Woburn, MA 01801
781-932-9600
www.AsbestosIdentificationLab.com

Dear Chris Lundberg,

Enclosed please find 6 samples tested for **LEAD PAINT** from project: **Near Court St., Brockton, MA.**
Asbestos Identification Laboratory subcontracted the samples to be analyzed by an accredited laboratory. This report contains data that are not covered by the NVLAP accreditation.

Thank you,

Michael Manning

Asbestos Identification Laboratory

January 25, 2021



The Identification Specialists

Analysis Report
prepared for
Asbestos Identification Laboratory

Report Date: 1/25/2021

Project Name: Near Court St. Brockton MA

Project #: 020.01384

SanAir ID#: 21003102



1551 Oakbridge Dr. Suite B | Powhatan, Virginia 23139-8061
888.895.1177 | 804.897.1177 | fax: 804.897.0070 | IAQ@SanAir.com | SanAir.com



SanAir ID Number
21003102
FINAL REPORT
1/25/2021 8:25:40 AM

Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600

Project Number: 020.01384
P.O. Number:
Project Name: Near Court St. Brockton MA
Collected Date: Not Provided on COC
Received Date: 1/21/2021 10:30:00 AM

Dear Michael Manning,

We at SanAir would like to thank you for the work you recently submitted. The 6 sample(s) were received on Thursday, January 21, 2021 via FedEx. The final report(s) is enclosed for the following sample(s): 3A, 3B, 4A, 4B, 5A, 5B.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

A handwritten signature in black ink, appearing to read "Abisola Kasali".

Abisola Kasali
Metals Laboratory Director
SanAir Technologies Laboratory

Final Report Includes:

- Cover Letter
- Analysis on Test Family AA
- Disclaimers and Additional Information

Sample conditions:

- 6 samples in Good condition.



SanAir ID Number
21003102
FINAL REPORT
1/25/2021 8:25:40 AM

Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600


Project Number: 020.01384
P.O. Number:
Project Name: Near Court St. Brockton MA
Collected Date: Not Provided on COC
Received Date: 1/21/2021 10:30:00 AM

Analyst: Ortega, David
Test Method: SW846/M3050B/7000B

Lead Bulk Analysis

Sample	Description	$\mu\text{g Pb}$ In Sample	Sample Size (grams)	Calculated RL	Sample Results	Sample Results
21003102 - 1	3A Layered Roofing TP-10 0-21	28	0.1163	86	244 $\mu\text{g/g (ppm)}$	0.024 % By Weight
21003102 - 2	3B Layered Roofing TP-10 0-21	31	0.114	87.7	271.1 $\mu\text{g/g (ppm)}$	0.027 % By Weight
21003102 - 3	4A Plaster TP-10 0-21	115	0.1152	86.8	994.6 $\mu\text{g/g (ppm)}$	0.100 % By Weight
21003102 - 4	4B Plaster TP-10 0-21	47	0.1232	81.2	380.3 $\mu\text{g/g (ppm)}$	0.038 % By Weight
21003102 - 5	5A Red Backed Tar TP-10 0-21	1499	0.1256	79.6	11940 $\mu\text{g/g (ppm)}$	1.194 % By Weight
21003102 - 6	5B Red Backed Tar TP-10 0-21	1584	0.1207	82.9	13130 $\mu\text{g/g (ppm)}$	1.313 % By Weight

Method Reporting Limit < 10 $\mu\text{g}/0.1 \text{ g}$ bulk

Signature: 

Date: 1/22/2021

Reviewed: 

Date: 1/22/2021



Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600

SanAir ID Number
21003102
FINAL REPORT
1/25/2021 8:25:40 AM

Project Number: 020.01384
P.O. Number:
Project Name: Near Court St. Brockton MA
Collected Date: Not Provided on COC
Received Date: 1/21/2021 10:30:00 AM

Disclaimer

SanAir Technologies Laboratory, Inc. participates in the Environmental Lead Accreditation Program (ELAP) administered by AIHA-LAP, LLC (Lab ID162952). Refer to our accreditation certificate or www.aihaaccreditedlabs.org for an up to date list of the Fields of Testing for which we are accredited. SanAir also participates in the State of New York's DOH-ELAP (Lab Id 11983), and has met the EPA's NLLAP program standards. This report does not constitute endorsement by AIHA-LAP, LLC and/or any other U.S. governmental agencies; and may not be accredited by every local, state or federal regulatory agency.

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Accreditation#

2/19/2021

98218

Alpha Analytical

MicroVision Labs Coal Ash and Lead Paint Report, Job # 14326
Alpha Analytical Project#: L2106016

Coal Ash Analysis

Scope of Work:

The initial portion of this report covers the methods and findings of the Coal/Coal Ash analysis that MicroVision Laboratories, Inc. conducted on five (5) soil samples submitted for testing from the L2106016 project. The purpose of this part of the analysis was to detect and document any coal, coal ash, wood ash or asphalt that may be present in the submitted soil samples by use of a combination of microscopy techniques including SEM/EDS, PLM, and macroscopic inspection.

Methods:

MicroVision Labs is accredited to the ISO/IEC 17025:2017 standard. This portion of the analysis follows our in house SOP #MVL05 (Microscopic Analysis for Coal, Coal Ash and Wood Ash). This method is listed on our certificate of accreditation and has been validated.

Findings:

The following pages display the data for each particle type detected in the samples for this project. Each page contains a PLM image, SEM image, and EDS spectrum for the particle types detected for these samples as well as particle type descriptions and observations.

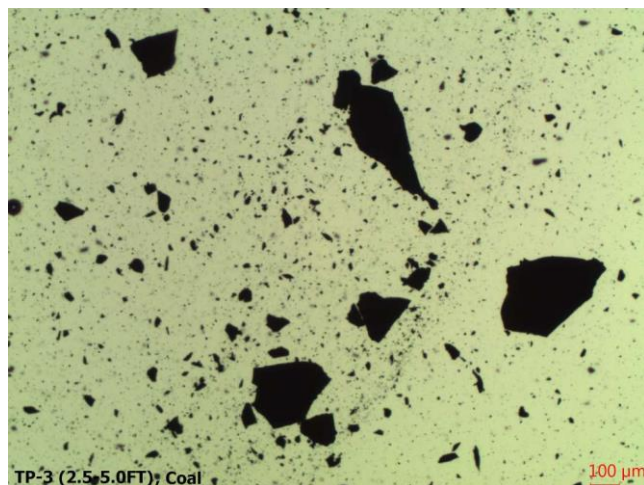
ISO/IEC 17025:2017 Accredited

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Phone: (978) 250-9909 Fax: (978) 250-9901 Email: Sales@MicroVisionLabs.com
www.MicroVisionLabs.com

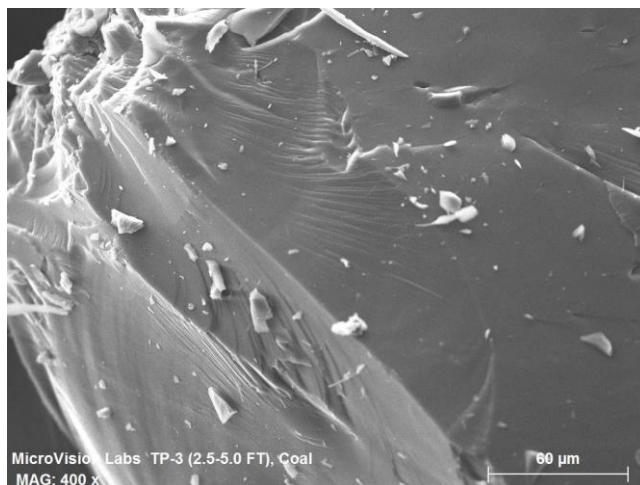
Sample: TP-3 (2.5-5.0 FT)

Number of Suspect Particle Types: Two (2)

Coal: This particle type consisted of thirty-three (33) shiny, black grains approximately 1-4mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

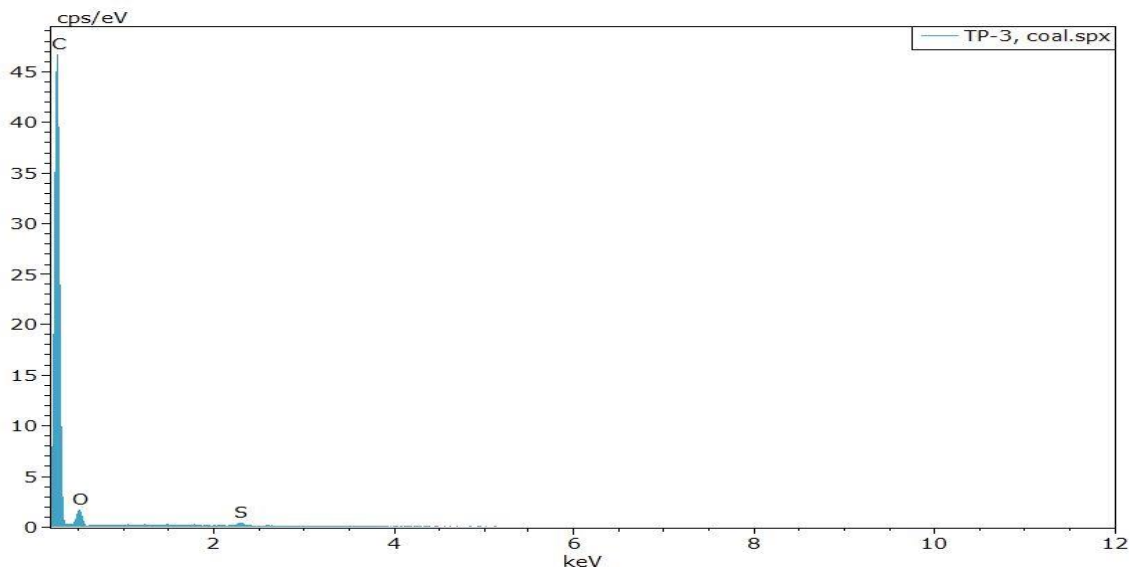


PLM Image



SEM Image

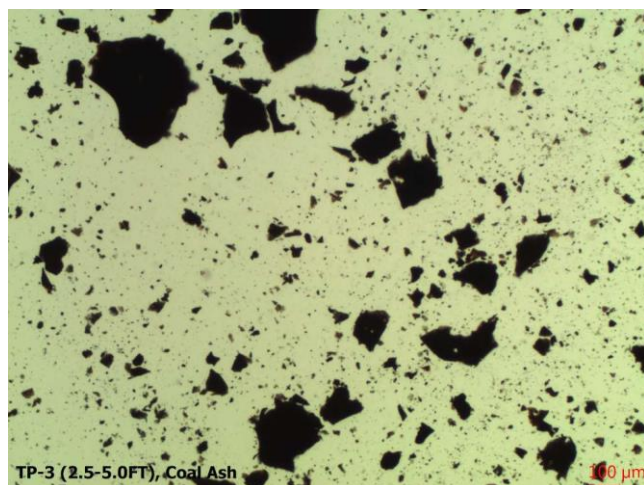
The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows concentrations of carbon, oxygen, and sulfur.



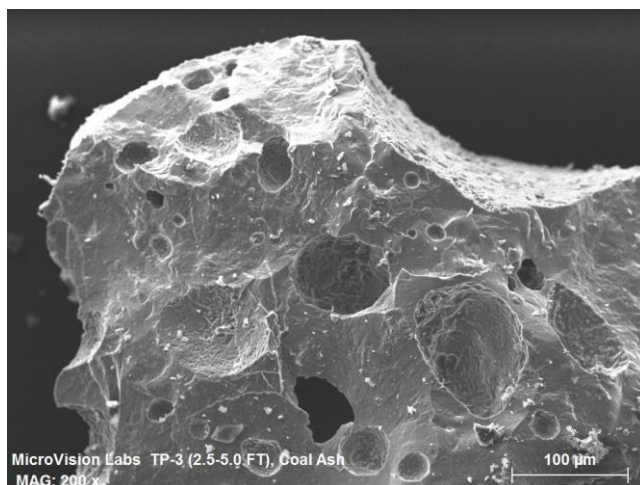
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Coal Ash: This particle type consisted of eighteen (18) dark, porous grains approximately 1-4mm in diameter. The PLM examination indicated this particle type to be consistent with coal ash. The PLM and SEM images show the spherical gas voids that formed during combustion.

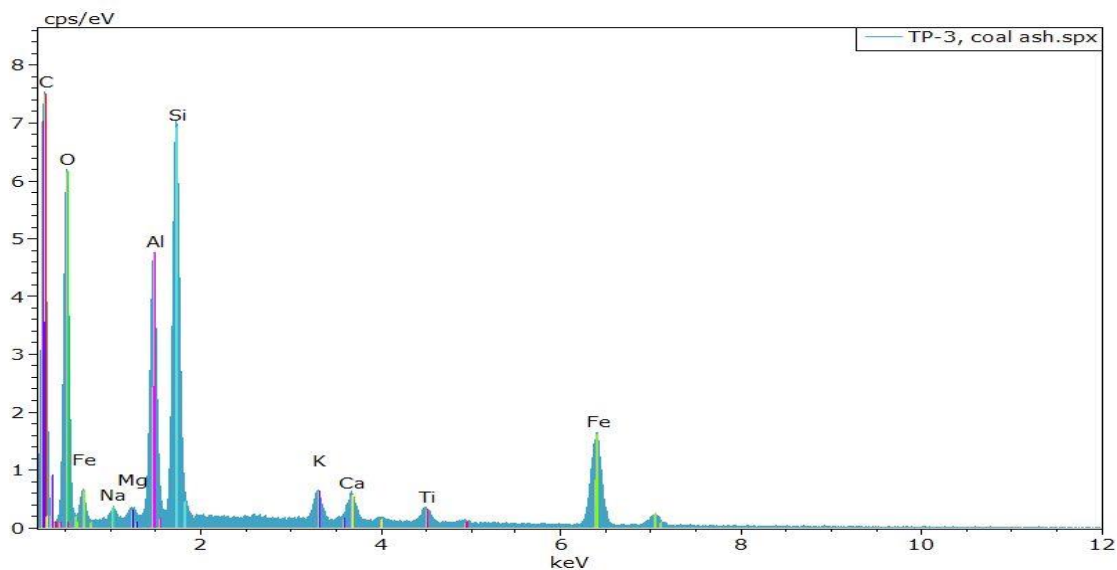


PLM Image



SEM Image

The EDS spectrum, shown below, indicates this particle type is coal ash. The analysis for this particle shows concentrations of carbon, oxygen, sodium, magnesium, aluminum, silicon, potassium, calcium, titanium and iron.



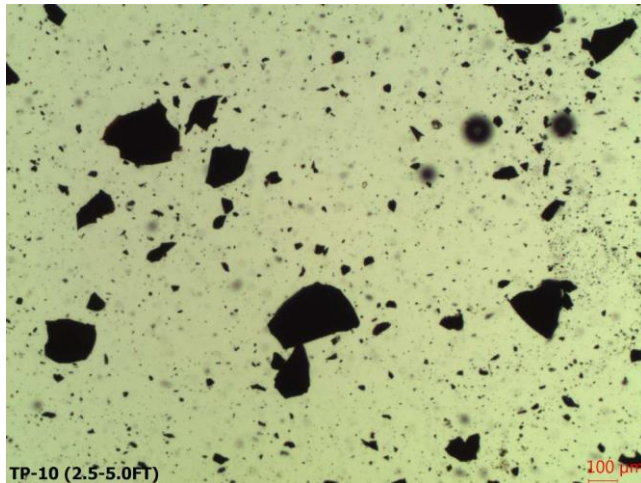
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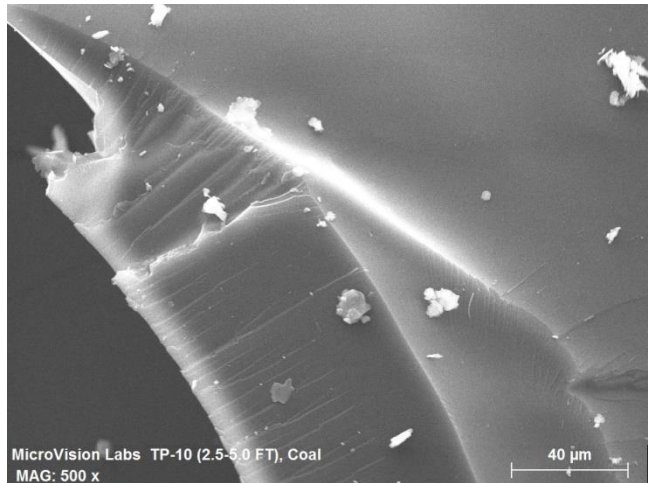
Sample: TP-10 (2.5-5.0 FT)

Number of Suspect Particle Types: Three (3)

Coal: This particle type consisted of eight (8) shiny, black grains approximately 1-3mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

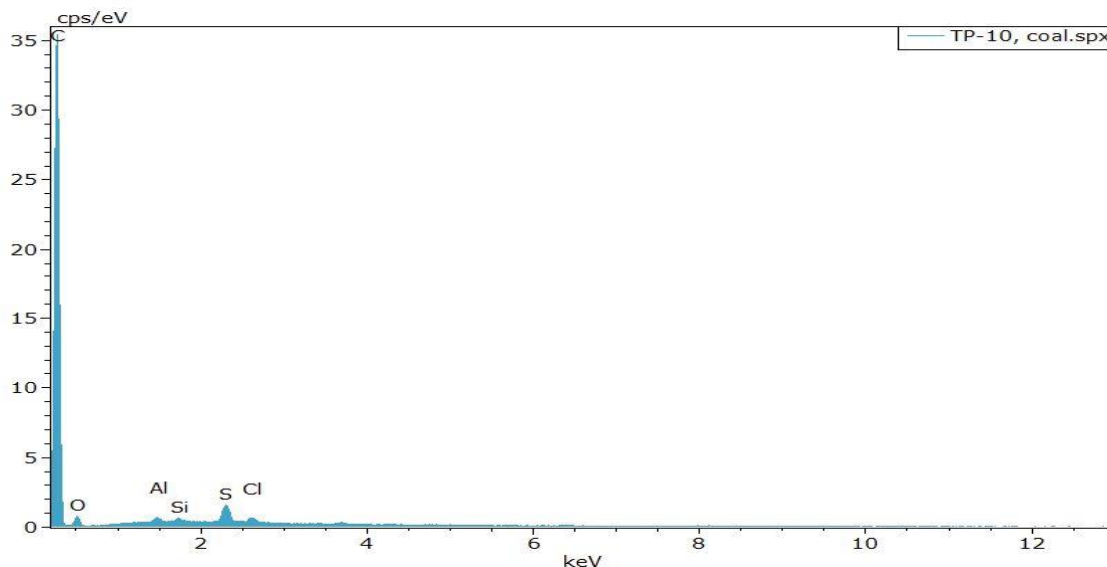


PLM Image



SEM Image

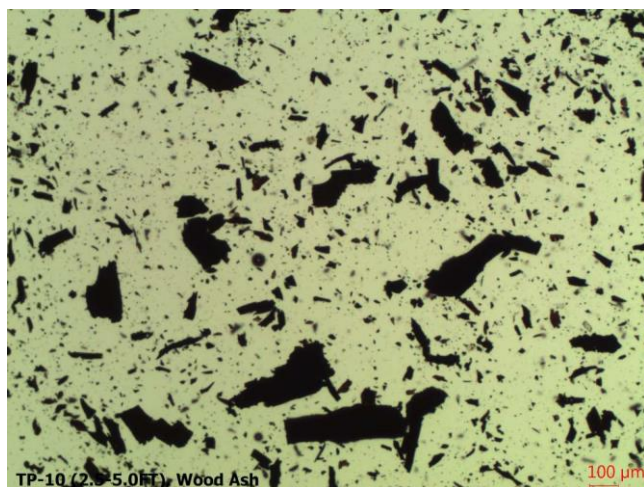
The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows concentrations of carbon, oxygen, aluminum, silicon, sulfur, and chlorine.



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Wood Ash: This particle type consisted of four (4) friable, black grains approximately 2-4mm in length. The PLM examination indicated this particle type to be consistent with wood ash. The PLM and SEM photos show the cellular structure typical of wood still present in these grains.

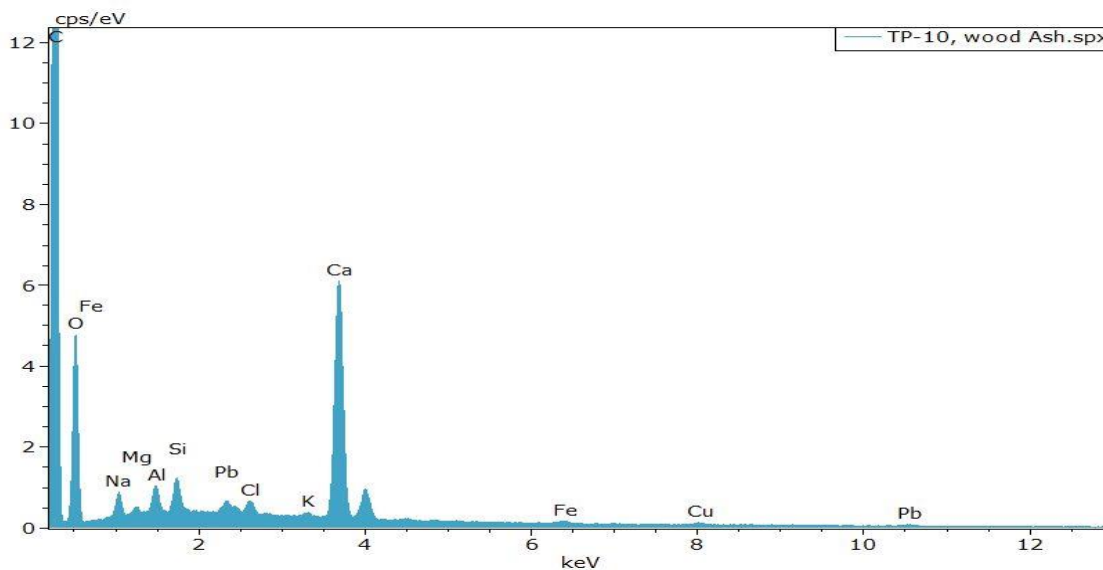


PLM Image



SEM Image

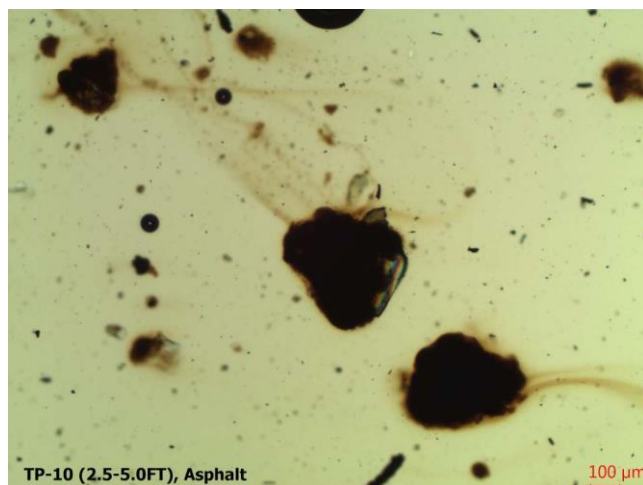
The EDS spectrum, shown below, indicates this particle type is wood ash. The analysis for this particle shows concentrations of carbon, oxygen, sodium, magnesium, aluminum, silicon, chlorine, potassium, calcium, iron, copper and lead.



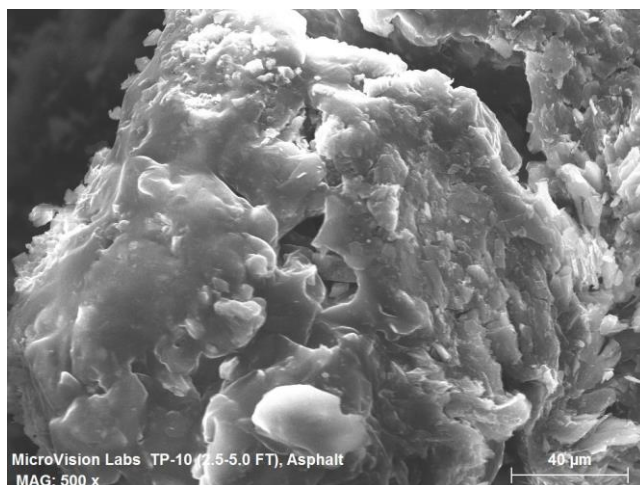
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Asphalt: This particle type consisted of two (2) ductile, black grains approximately 1mm in diameter. These grains had mineral matter embedded in and stuck to them. During the PLM examination, these particles slowly dissolved in the mounting oil which is a typical characteristic of asphalt. The PLM image shows the dissolving asphalt particles, and the SEM image illustrates the morphology of asphalt with the embedded mineral grains.

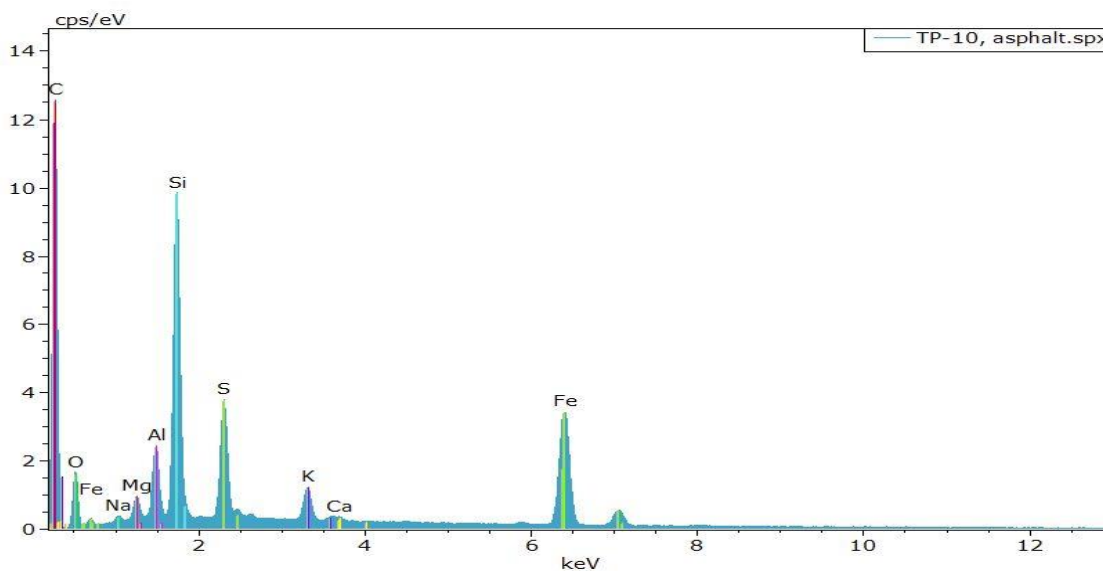


PLM Image



SEM Image

The EDS spectrum, shown below, indicates this particle type is asphalt. The analysis for this particle shows concentrations of carbon, oxygen, sodium, magnesium, aluminum, silicon, sulfur, potassium, calcium, and iron.

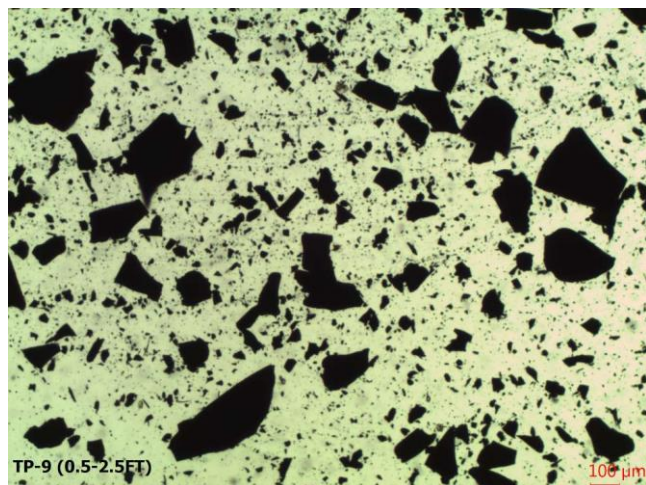
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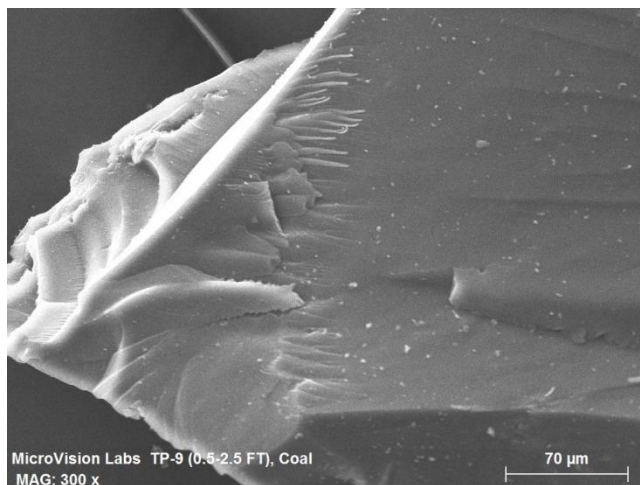
Sample: TP-9 (0.5-2.5 FT)

Number of Suspect Particle Types: Two (2)

Coal: This particle type consisted of nine (9) shiny, black grains approximately 1-5mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

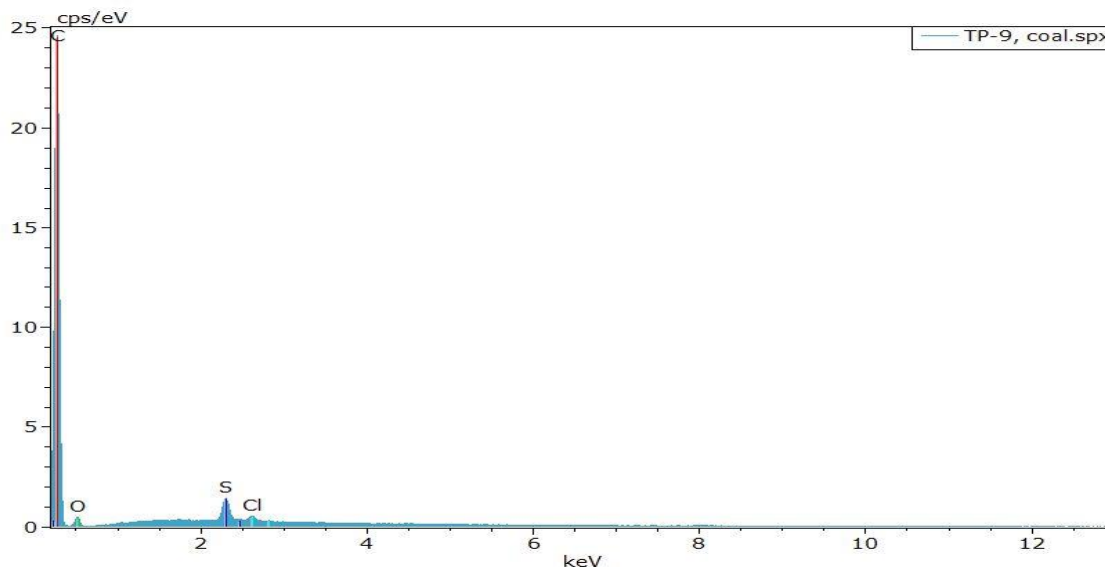


PLM Image



SEM Image

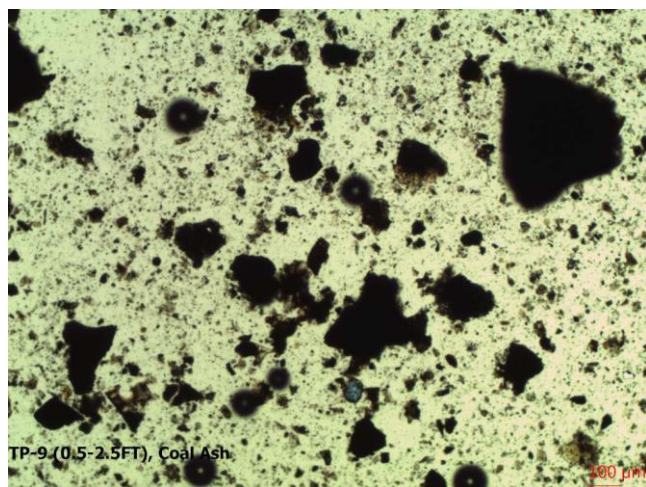
The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows concentrations of carbon, oxygen, sulfur, and chlorine.



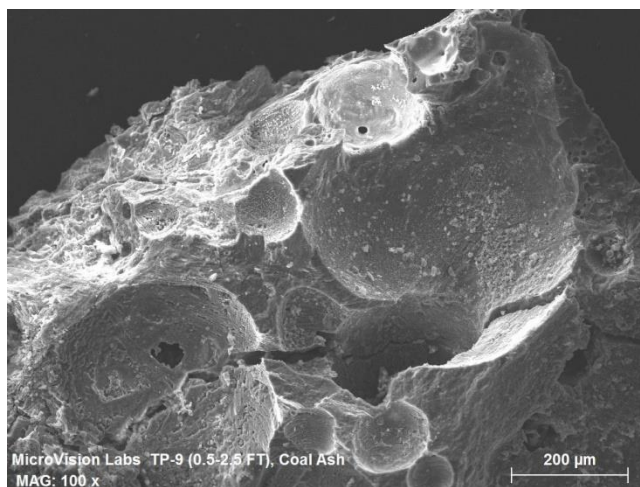
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Coal Ash: This particle type consisted of four (4) dark, porous grains approximately 2-6mm in diameter. The PLM examination indicated this particle type to be consistent with coal ash. The PLM and SEM images show the spherical gas voids that formed during combustion.

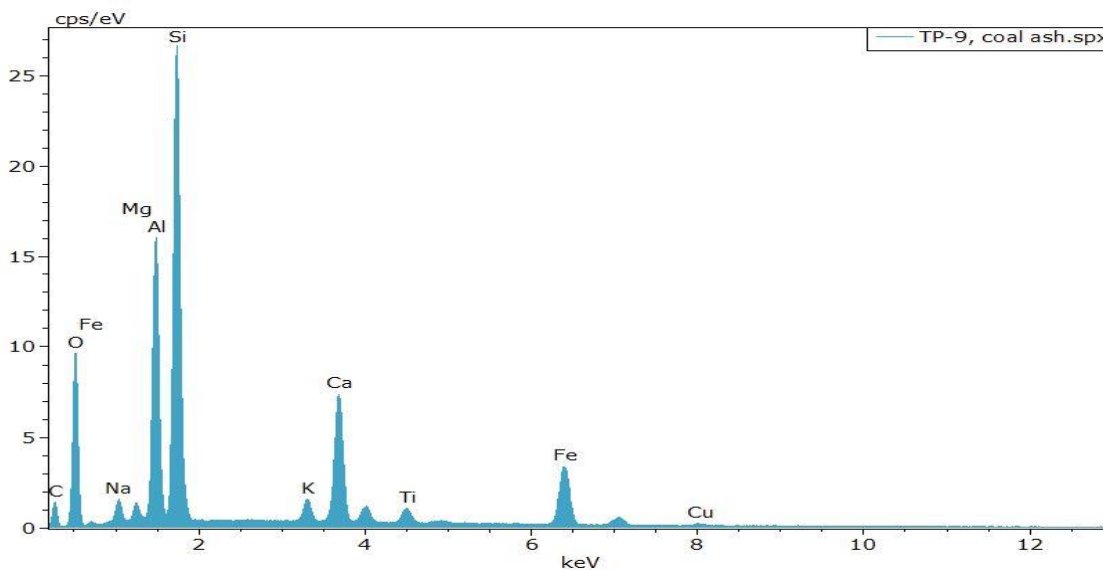


PLM Image



SEM Image

The EDS spectrum, shown below, indicates this particle type is coal ash. The analysis for this particle shows concentrations of carbon, oxygen, sodium, magnesium, aluminum, silicon, potassium, calcium, titanium, iron, and copper.



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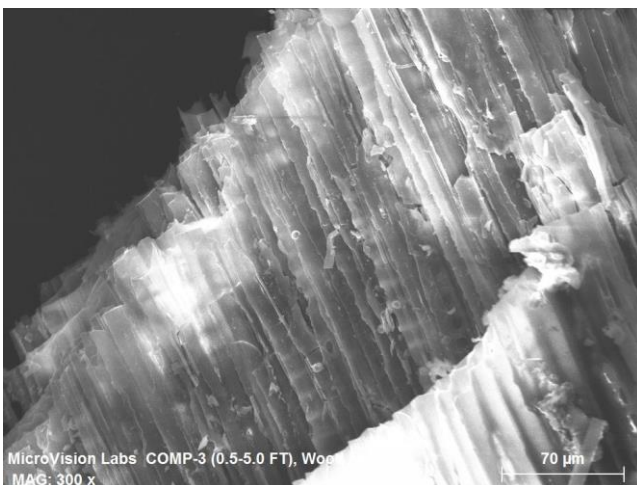
Sample: Comp-3 (0.5-5.0 FT)

Number of Suspect Particle Types: Three (3)

Wood Ash: This particle type consisted of two (2) friable, black grains approximately 3-4mm in length. The PLM examination indicated this particle type to be consistent with wood ash. The PLM and SEM photos show the cellular structure typical of wood still present in these grains.

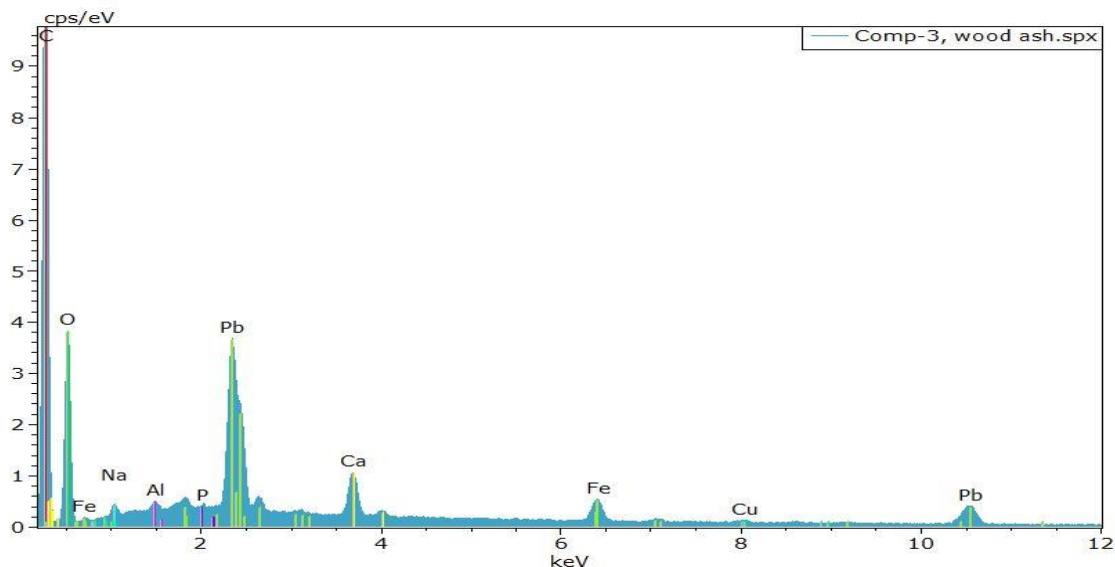


PLM Image



SEM Image

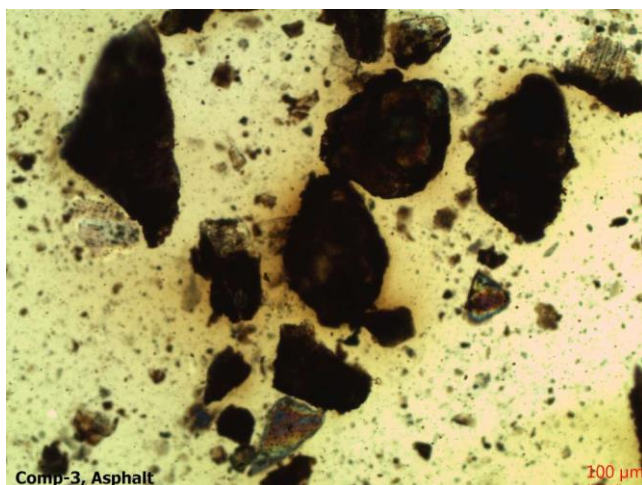
The EDS spectrum, shown below, indicates this particle type is wood ash. The analysis for this particle shows concentrations of carbon, oxygen, sodium, aluminum, phosphorus, calcium, iron, copper and lead.



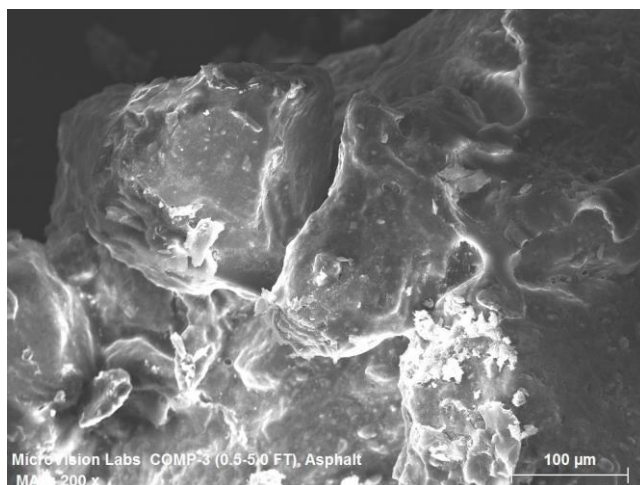
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Asphalt: This particle type consisted of twelve (12) ductile, black grains approximately 1-5mm in diameter. These grains had mineral matter embedded in and stuck to them. During the PLM examination, these particles slowly dissolved in the mounting oil which is a typical characteristic of asphalt. The PLM image shows the dissolving asphalt particles, and the SEM image illustrates the morphology of asphalt with the embedded mineral grains.

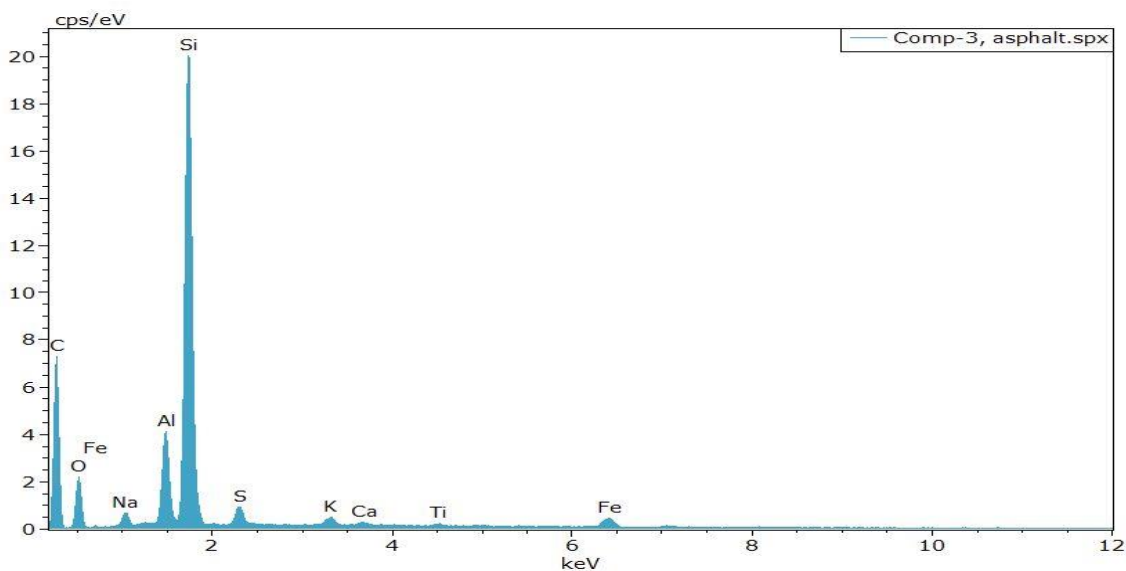


PLM Image



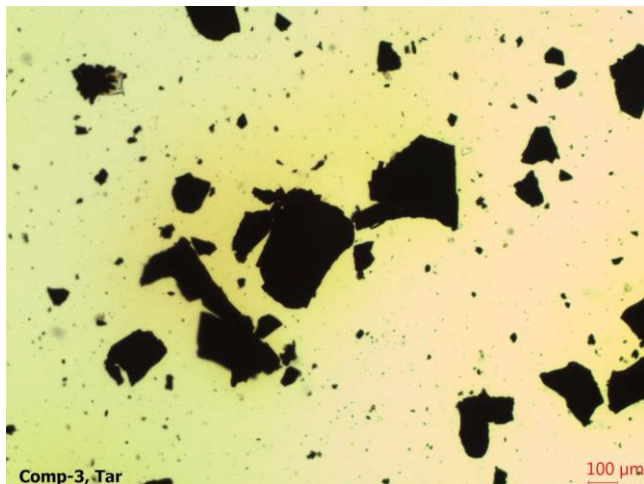
SEM Image

The EDS spectrum, shown below, indicates this particle type is asphalt. The analysis for this particle shows concentrations of carbon, oxygen, sodium, aluminum, silicon, sulfur, potassium, calcium, titanium and iron.

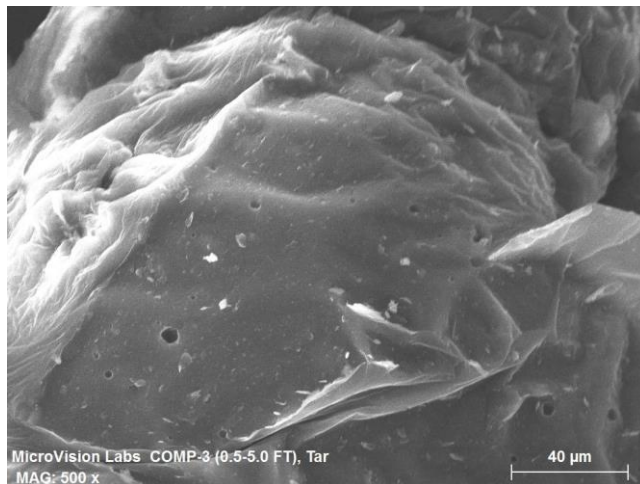
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Tar: This particle type consisted of nineteen (19) dark, ductile grains approximately 1-6mm in diameter. During the PLM examination these particles slowly dissolved in the mounting oil which is a typical characteristic of tar. The PLM image shows the dissolving tar particles, and the SEM image illustrates the morphology of tar.

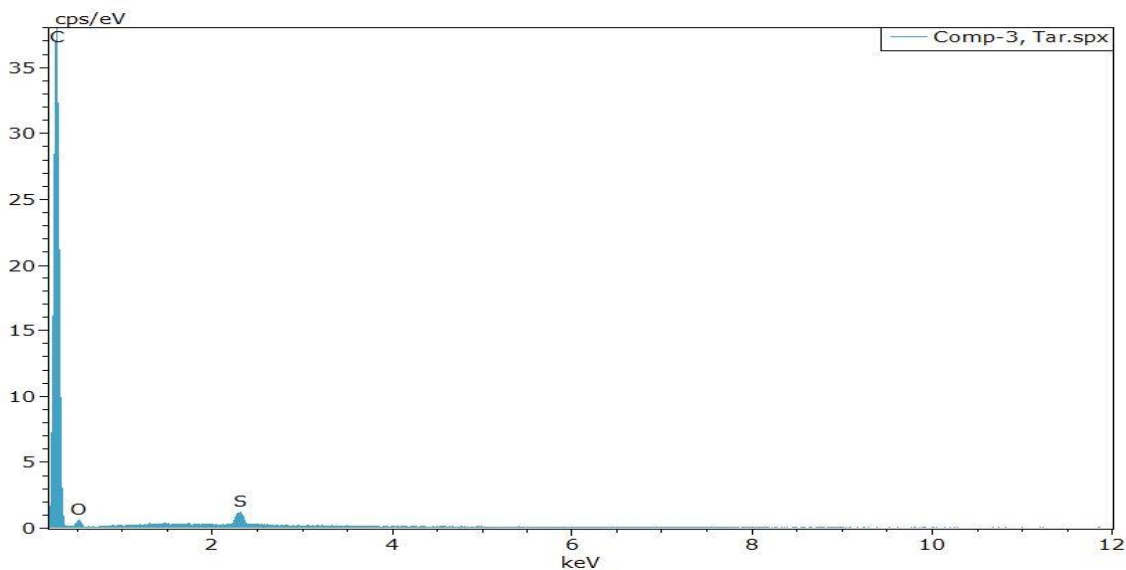


PLM Image



SEM Image

The EDS spectrum, shown below, indicates this particle type is tar. The analysis for this particle shows concentrations of carbon, oxygen, and sulfur.



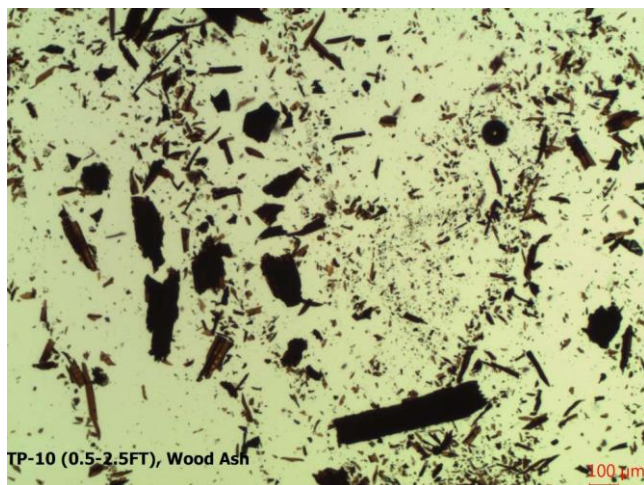
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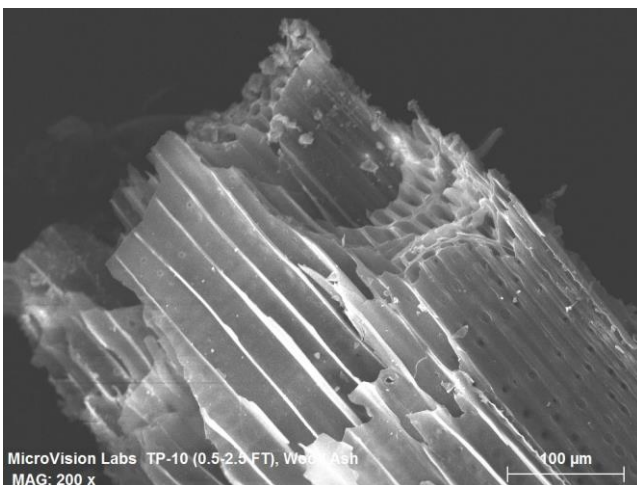
Sample: TP-10 (0.5-2.5 FT)

Number of Suspect Particle Types: Three (3)

Wood Ash: This particle type consisted of one (1) friable, black grain approximately 2mm in length. The PLM examination indicated this particle type to be consistent with wood ash. The PLM and SEM photos show the cellular structure typical of wood still present in this grain.

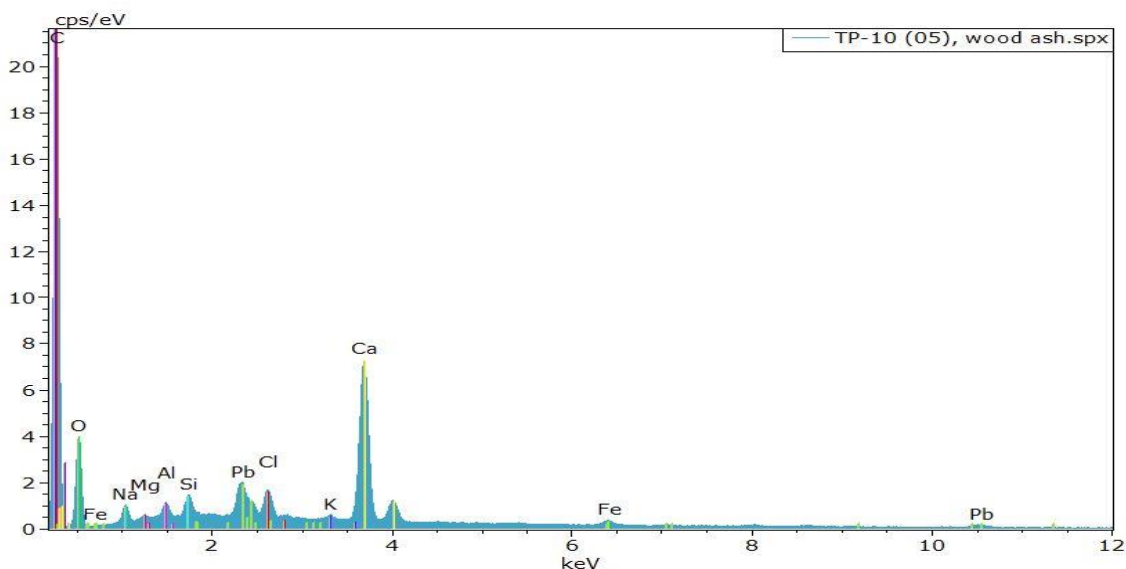


PLM Image



SEM Image

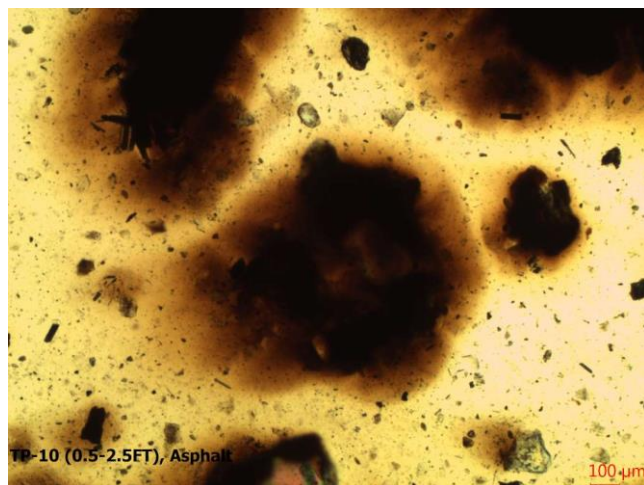
The EDS spectrum, shown below, indicates this particle type is wood ash. The analysis for this particle shows concentrations of carbon, oxygen, sodium, magnesium, aluminum, silicon, chlorine, potassium, calcium, iron, and lead.



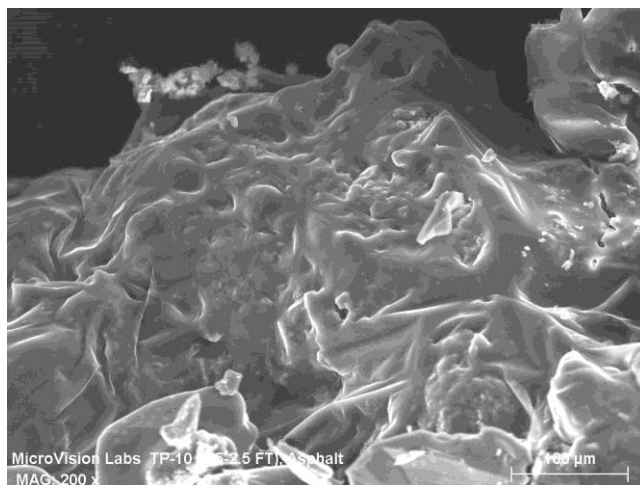
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Asphalt: This particle type consisted of fifteen (15) ductile, black grains approximately 1-4mm in diameter. These grains had mineral matter embedded in and stuck to them. During the PLM examination, these particles slowly dissolved in the mounting oil which is a typical characteristic of asphalt. The PLM image shows the dissolving asphalt particles, and the SEM image illustrates the morphology of asphalt with the embedded mineral grains.

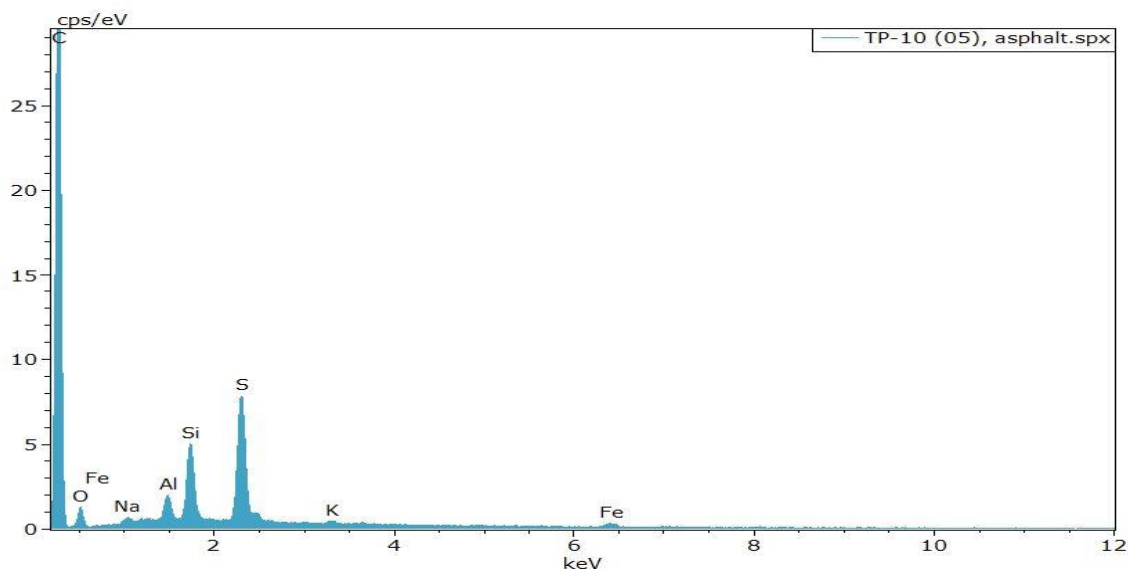


PLM Image



SEM Image

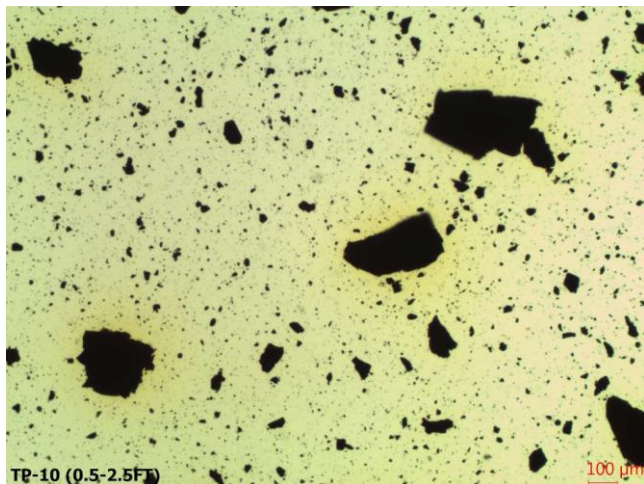
The EDS spectrum, shown below, indicates this particle type is asphalt. The analysis for this particle shows concentrations of carbon, oxygen, sodium, aluminum, silicon, sulfur, potassium, and iron.



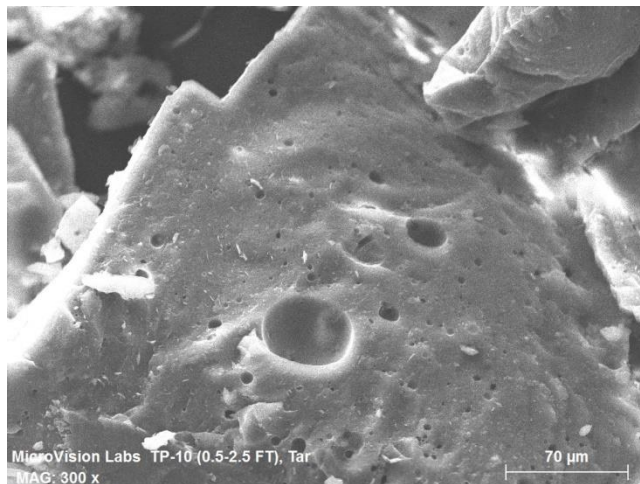
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www.MicroVisionLabs.com

Tar: This particle type consisted of eight (8) dark, ductile grains approximately 1-3mm in diameter. During the PLM examination these particles slowly dissolved in the mounting oil which is a typical characteristic of tar. The PLM image shows the dissolving tar particles, and the SEM image illustrates the morphology of tar.

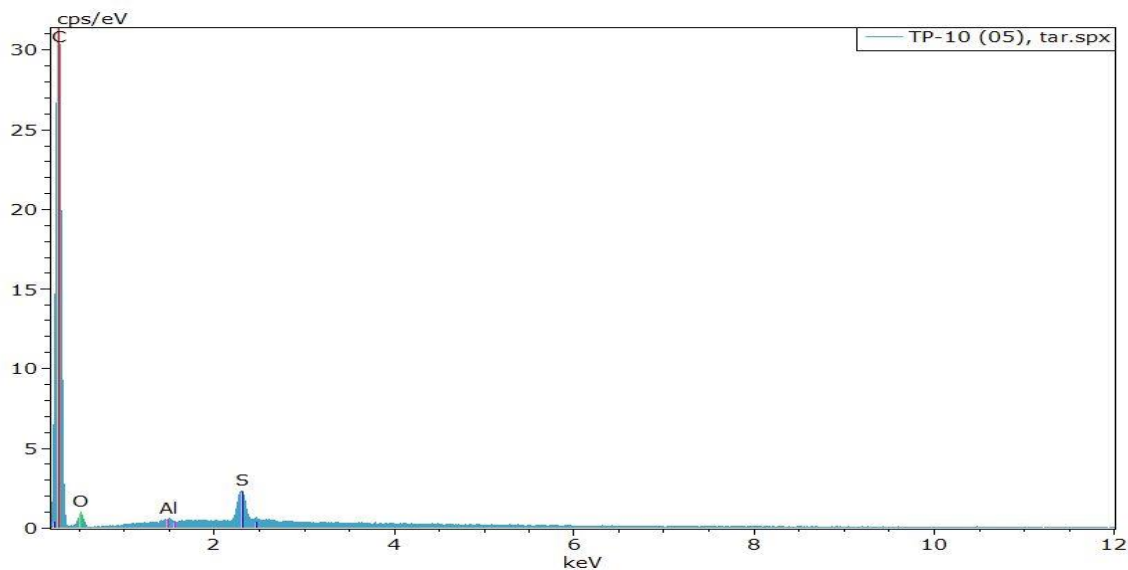


PLM Image



SEM Image

The EDS spectrum, shown below, indicates this particle type is tar. The analysis for this particle shows concentrations of carbon, oxygen, aluminum, and sulfur.



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Lead Paint Analysis

Scope of Work:

The second portion of this report covers the methods and findings of the Lead Paint analysis. The purpose of this part of the analysis was to detect and document any lead paint or other lead-bearing particles that may be present in the submitted soil samples, by use of a combination of microscopy techniques including macroscopic inspection and Scanning Electron Microscopy with Back Scatter Electron Imaging and Energy Dispersive X-ray Spectroscopy (SEM/BSE/EDS).

Methods:

MicroVision Labs is accredited to the ISO/IEC 17025:2017 standard. This analysis follows our in house SOP #MVL09 (Microscopic Analysis for Lead Paint Chips). This method is listed on our certificate of accreditation and has been validated.

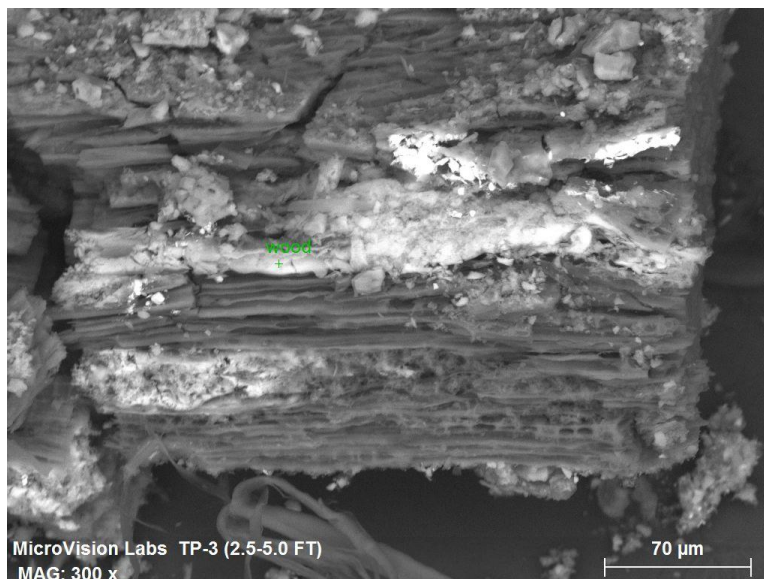
Findings: The following pages display the data for the suspect particles detected in the submitted samples for this project. Each page contains a BSE image and EDS spectrum for the particles detected in these samples.

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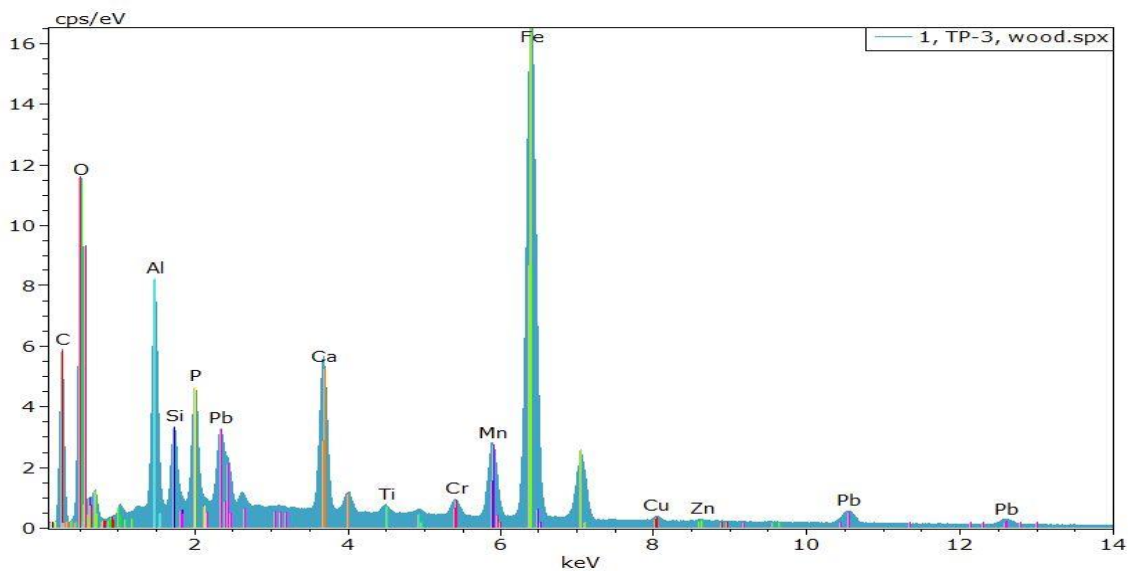
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www.MicroVisionLabs.com

Sample: TP-3 (2.5-5.0 FT)

The BSE image below shows a piece of woody vegetation from this soil sample, with a brighter layer containing iron with lead.



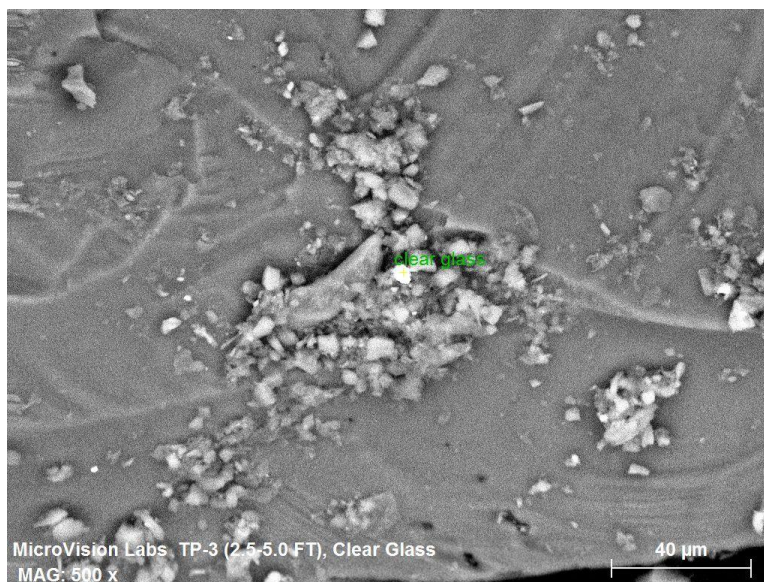
Woody Vegetation Particle with Lead, SEM/BSE Image (above), EDS Spectrum (below)



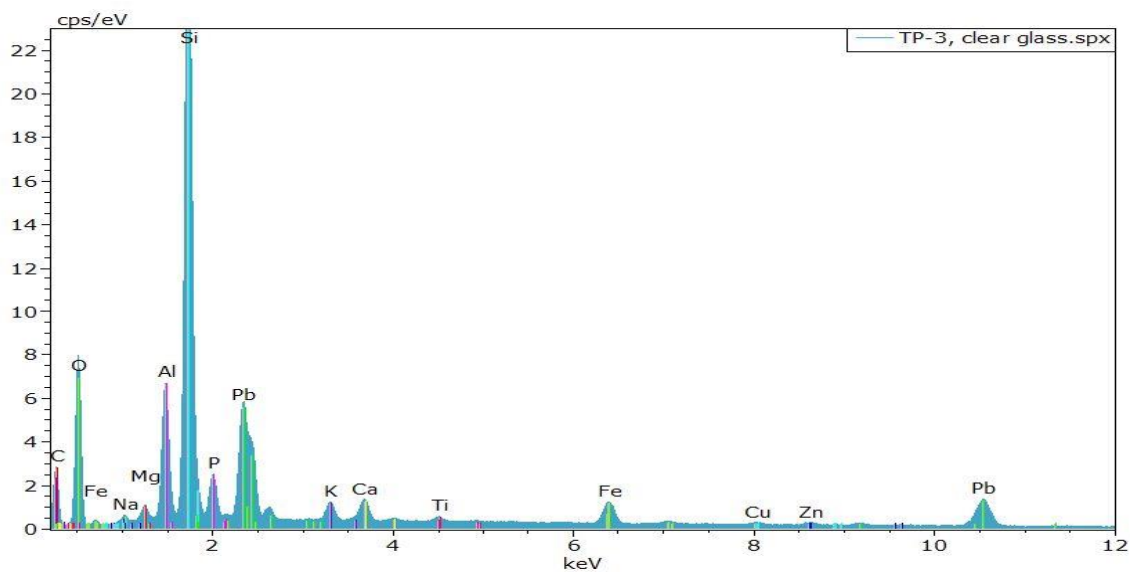
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The BSE image below shows bright specks of debris on the surface of another larger particle from this sample. EDS confirmed these specks contained lead.



Lead Speck, SEM/BSE Image (above), EDS Spectrum (below)

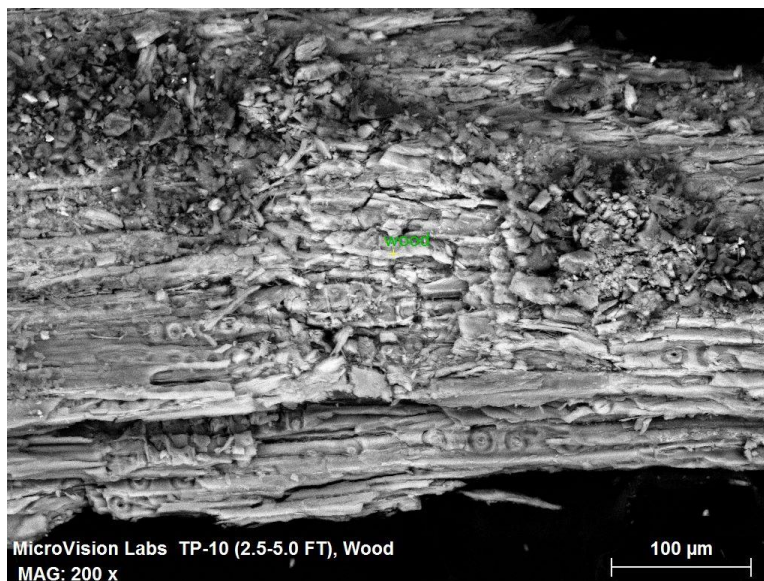


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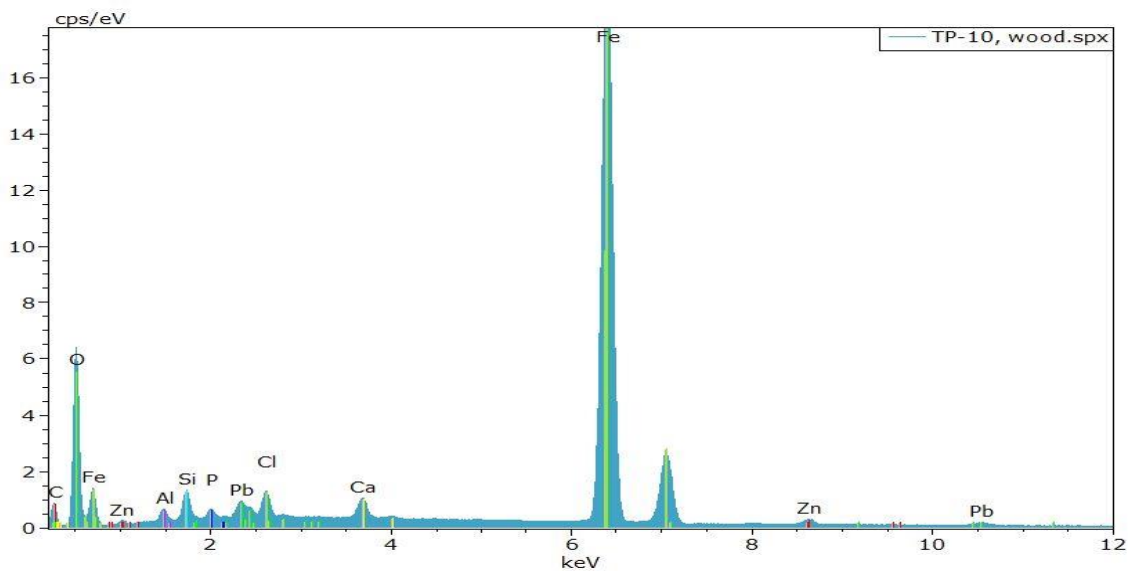
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Sample: TP-10 (2.5-5.0 FT)

The BSE image below shows a woody vegetation particle from this sample which contained large concentrations of iron and lower concentrations of lead.



Woody Vegetation Particle with Lead, SEM/BSE Image (above), EDS Spectrum (below)

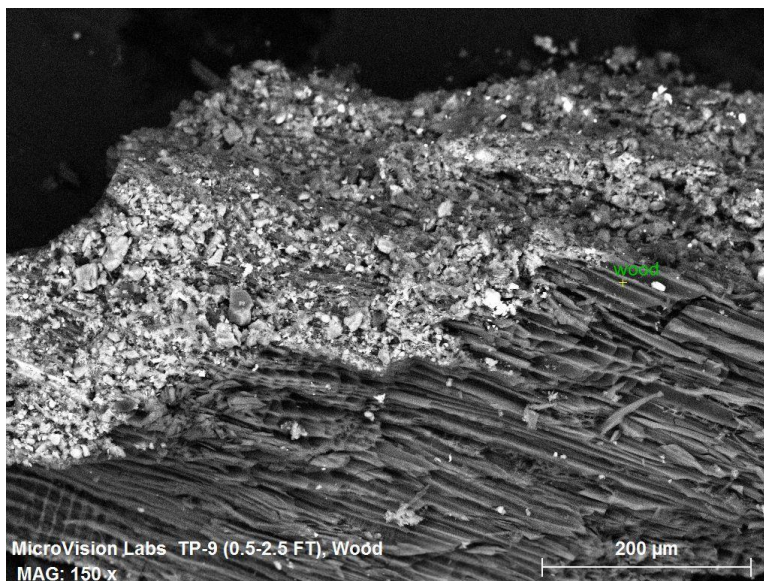


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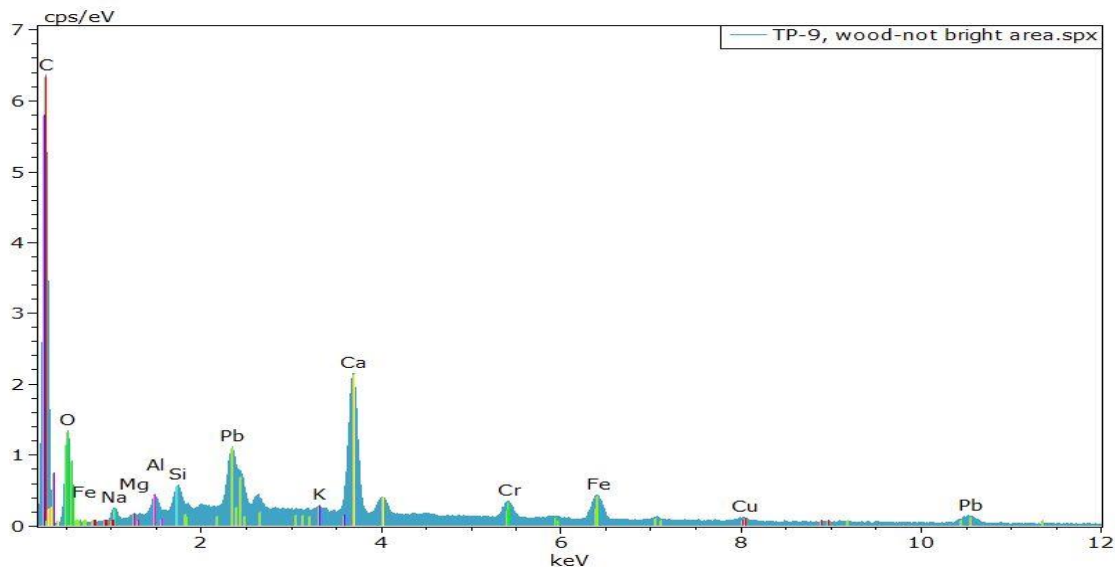
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Sample: TP-9 (0.5-2.5 FT)

The BSE image below shows a woody vegetation particle which was examined from this sample. This particle contained lead which was not confined to a specific layer but was distributed throughout.



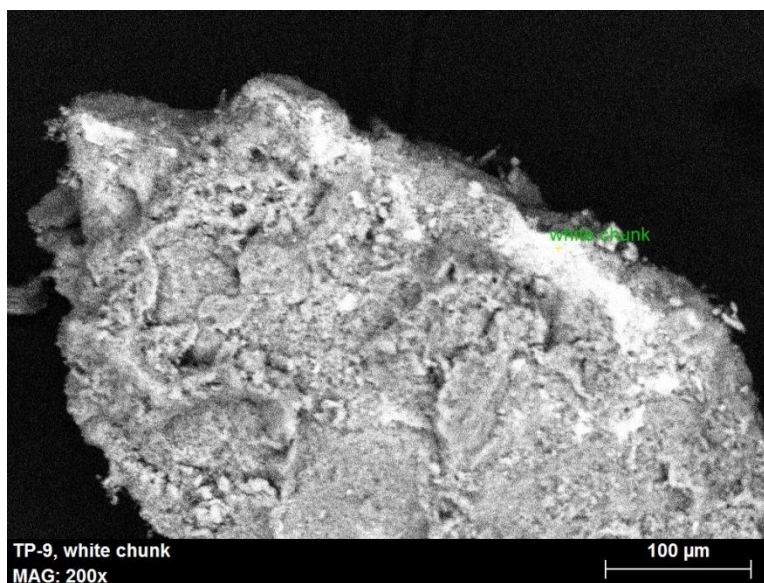
Woody Vegetation Particle with Lead, SEM/BSE Image (above), EDS Spectrum (below)



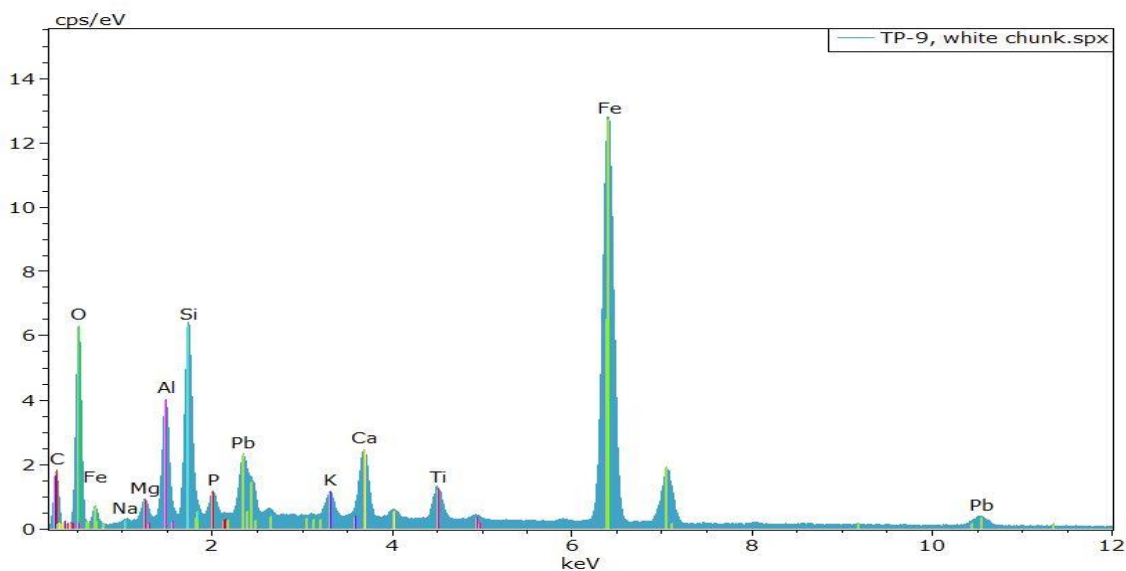
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The BSE image of a white chunk below was examined and shown to contain an area with high concentrations of iron with lower concentrations of lead.



White Chunk with Lead, SEM/BSE Image (above), EDS Spectrum (below)



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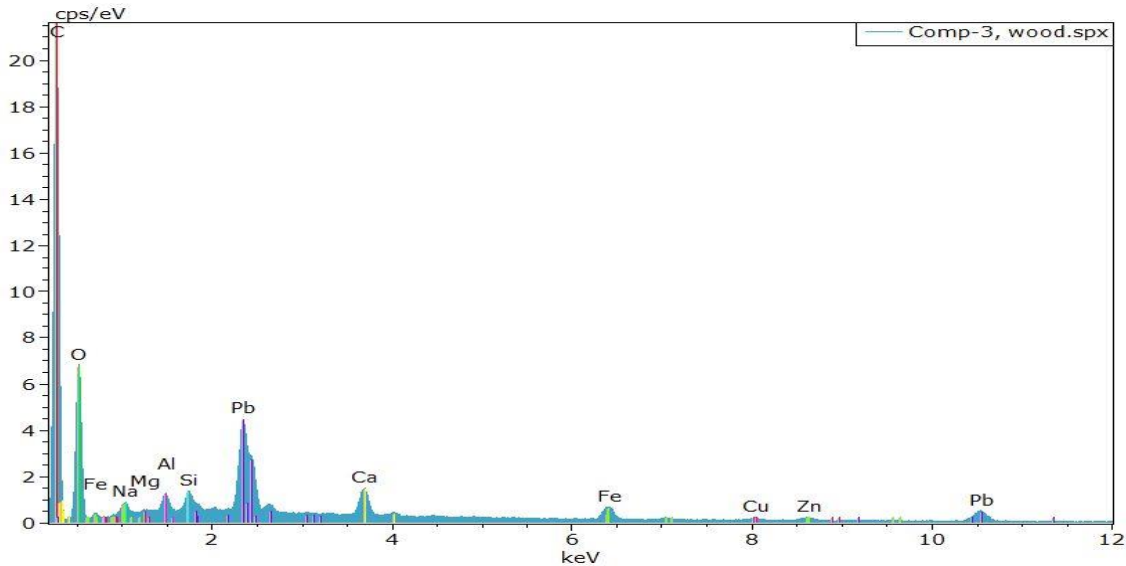
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Sample: Comp-3 (0.5-5.0 FT)

The BSE image below shows a woody vegetation particle which was examined from this sample and contained lead.



Woody Vegetation Particle with Lead, SEM/BSE Image (above), EDS Spectrum (below)

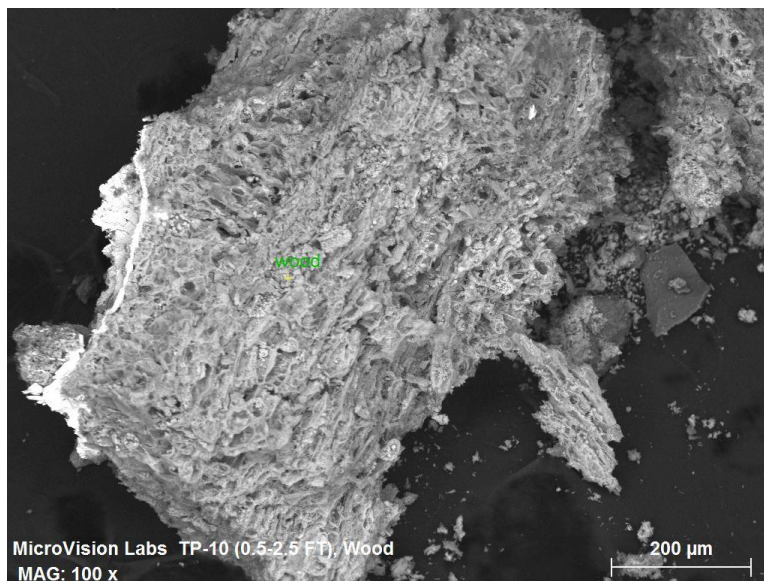


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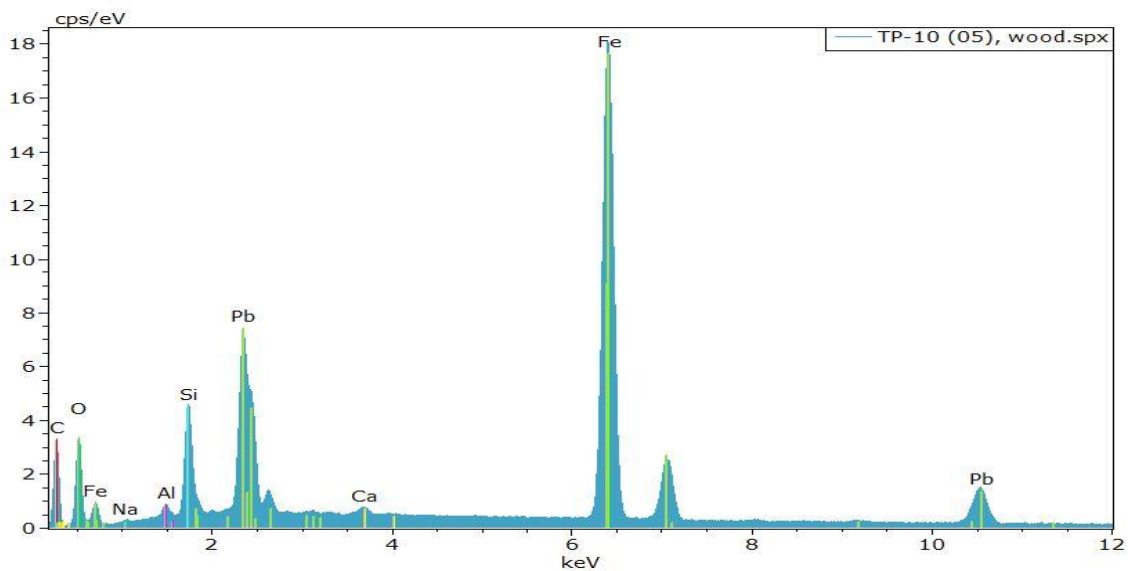
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Sample: TP-10 (0.5-2.5 FT)

The BSE image below shows a woody vegetation particle that was examined from this sample which contains a high concentration of iron and lower concentration of lead.



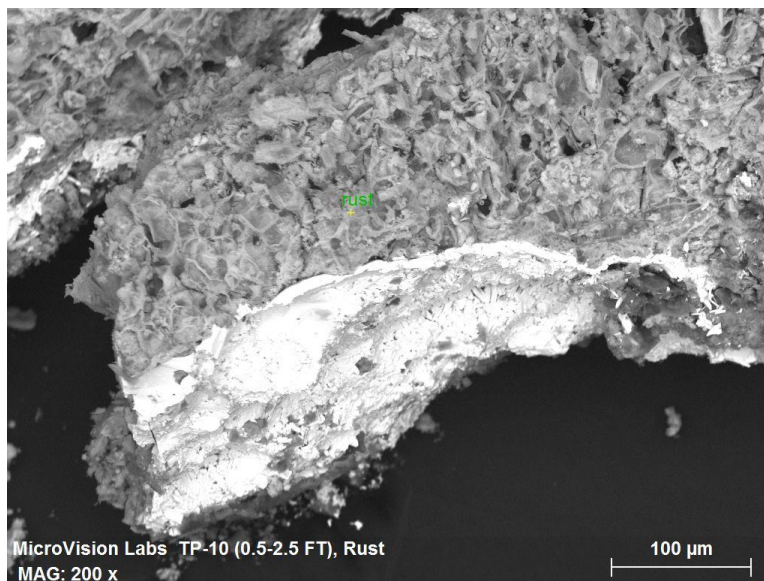
Woody Vegetation Particle with Lead, SEM/BSE Image (above), EDS Spectrum (below)



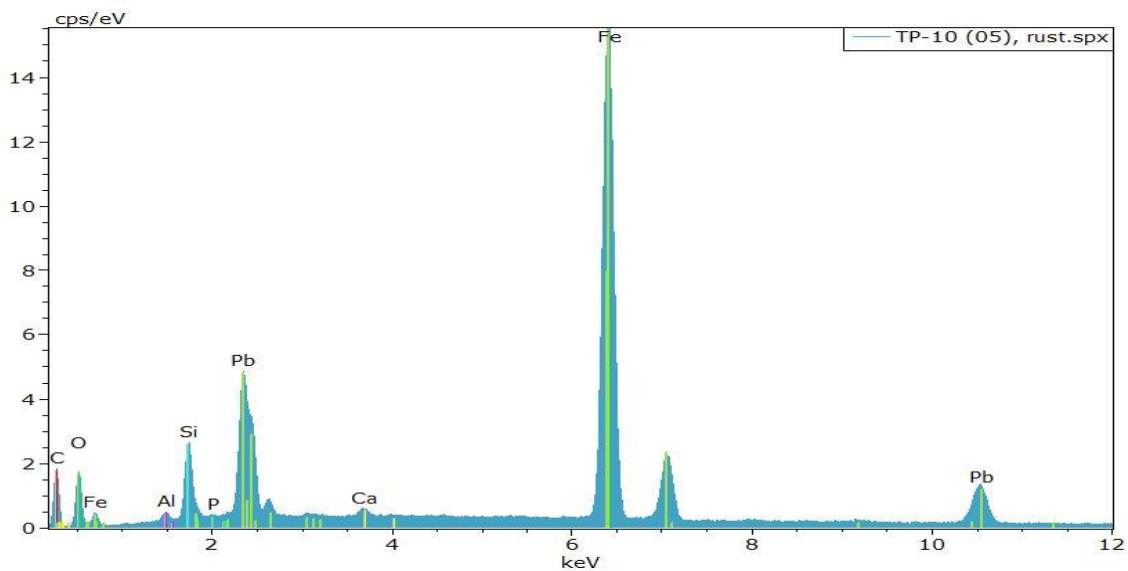
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A piece of rust was also examined from this sample and found to contain lead.



Rust Particle with Lead, SEM/BSE Image (above), EDS Spectrum (below)



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Results Summary Table:

Sample Name	Material Detected
TP-3 (2.5-5.0 FT)	Coal (moderate), Coal Ash (moderate); Woody Vegetation Particles with Lead, Lead Specks detected
TP-10 (2.5-5.0 FT)	Coal (light), Wood Ash (trace), Asphalt (trace); Woody Vegetation Particles and Wood Ash Particles with Lead
TP-9 (0.5-2.5 FT)	Coal (light), Coal Ash (trace); Woody Vegetation Particles with Lead, White Chunk with Lead
Comp-3 (0.5-5.0 FT)	Wood Ash (trace), Asphalt (light), Tar (moderate); Woody Vegetation Particles and Wood Ash Particles with Lead
TP-10 (0.5-2.5 FT)	Wood Ash (trace), Asphalt (moderate), Tar (light); Woody Vegetation Particles and Wood Ash Particles with Lead, Rust Chunk with Lead

For the coal ash portion of this analysis, the concentrations of the particle types detected in these samples are listed in parenthesis in the table above and are based on the number of particles found and the relative difficulty in finding them. The concentration information is listed for informational purposes only and has no bearing on exemption status.

For the lead paint portion of the analysis, no lead paint chips or flakes were detected in any of the soil samples, but other types of lead particles were detected in each of the five samples. The table above summarizes the types of particles that lead was detected in for each sample.

Please let us know if you have any questions about this analysis or if there is anything else we can do for you.

Sincerely,




Denise Weidler
Analytical Microscopist

Reviewed by: AAC

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14326

		Subcontract Chain of Custody MicroVision 187 Billerica Road Chelmsford, MA 01824		Alpha Job Number L2106016	
Client Information Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-1019 Phone: 603.319.5010 Email: mgulli@alphalab.com		Project Information Project Location: MA Project Manager: Melissa Gulli Turnaround & Deliverables Information Due Date: Deliverables:		Regulatory Requirements/Report Limits State/Federal Program: Regulatory Criteria: RCS-1-14	
Project Specific Requirements and/or Report Requirements Reference following Alpha Job Number on final report/deliverables: L2106016 Report to include Method Blank, LCS/LCSD:					
Additional Comments: Send all results/reports to subreports@alphalab.com					
Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
TP-3 (2.5-5.0 FT)		01-11-21 11:25	SOIL	Coal Ash Determination; Lead Paint by Flame Atomic Absorption	
TP-10 (2.5-5.0 FT)		01-12-21 10:00	SOIL	Coal Ash Determination; Lead Paint by Flame Atomic Absorption	
TP-9 (0.5-2.5 FT)		01-12-21 10:35	SOIL	Coal Ash Determination; Lead Paint by Flame Atomic Absorption	
COMP-3 (0.5-5.0 FT)		01-12-21 12:05	SOIL	Coal Ash Determination; Lead Paint by Flame Atomic Absorption	
TP-10 (0.5-2.5 FT)		01-12-21 08:50	SOIL	Coal Ash Determination; Lead Paint by Flame Atomic Absorption	
Relinquished By:			Received By:		Date/Time:
Date/Time:			Date/Time:		Date/Time:
Form No: AL_subcoc					

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CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 1/12/21 ALPHA Job #: L2101571

8 Walkup Drive
Westboro, MA 01581
Tel: 508-858-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-622-8300

Project Information

Project Name: Brockton
Project Location: Parcel 109-044
Project #: 201.02017.001
Project Manager: Tracy Costa
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client Info PO #: 12839

Client Information

Client: Pransom Consulting
Address: 60 Valley St
Providence, RI
Phone: 401-978-0987
Email: tracy.costa@pransom.com

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State / Fed Program Criteria

Additional Project Information:

Run TCLP Lead if trigger is exceeded (100mg/lead)

SUB-COALASH, SUB LEAD PAINT									
SAMPLE INFO									
Filtration									
<input type="checkbox"/> Field									
<input type="checkbox"/> Lab to do									
Preservation									
<input type="checkbox"/> Lab to do									
Sample Comments									

ANALYSIS									
VOC: C-266	C-24	C-242	SYOC: C-266	C-24	C-242	METALS: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242
EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	EPH: C-266	C-24	C-242	C-242

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials
		Date	Time		
01571	TP-6 (0.5-5.0 FT)	1/12/21	12:20	S	TZ
	-02 TP-6 (5.0-9.0 FT)	1/12/21	12:30	S	TZ
	-03 TP-7 (0.5-5.0 FT)	1/12/21	11:35	S	TZ
	-04 TP-7 (5.0-9.0 FT)	1/12/21	11:45	S	TZ
	-05 TP-8 (0.5-2.5 FT)	1/12/21	11:05	S	TZ
	-06 TP-8 (2.5-5.0 FT)	1/12/21	11:15	S	TZ
06016-03	-07 TP-9 (0.5-2.5 FT)	1/12/21	10:35	S	TZ
01571-02	-08 TP-9 (2.5-5.0 FT)	1/12/21	10:42	S	TZ
-05-05	-09 TP-10 (0.5-2.5 FT)	1/12/21	09:50	S	TZ
-02-01	-10 TP-10 (2.5-5.0 FT)	1/12/21	10:00	S	TZ

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cuvette
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO₃
D= H₂SO₄
E= NaOH
F= MeOH
G= NaHSO₄
H= Na₂S₂O₅
I= Ascorbic Acid
J= NH₄Cl
K= Zn Acetate
O= Other

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Tracy Costa</u>	1/12/21 14:20	<u>Michael Delle</u>	1/12/21 13:30
<u>Tracy Costa</u>	1/12/21 18:10	<u>Michael Delle</u>	1/12/21 13:10

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
FORM NO: 01-01 (rev. 12-Mar-2012)

FORM NO: 01-01 (rev. 18-Jan-2010)